

MODERN PLASTICS

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FEBRUARY, 1936

VOLUME 13

NUMBER 6

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NEXT MONTH

Plastic Modes, which makes its bow this month on page 13, will present two pages of smart millinery designed by Lilly Daché. Each hat will express its preference for plastic ornamentation as will bags by famous designers which will accompany them. Clever watches encased in solid blocks of cast resin for sportswear will also appear.

And William H. Adams, Jr. of the Haveg Corporation has promised a story on industrial uses of that interesting material.

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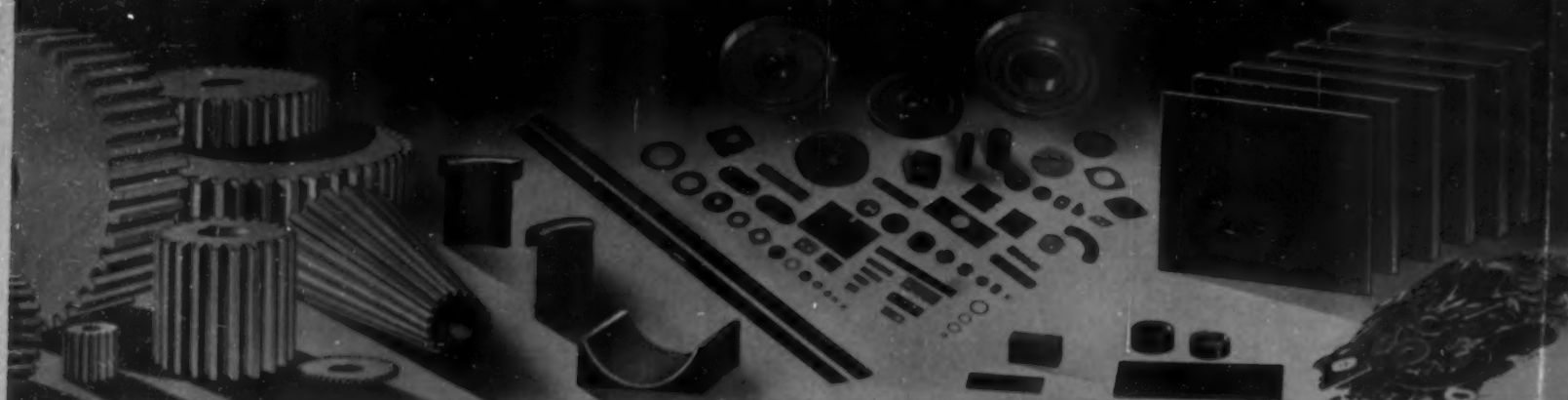
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MODERN PLASTICS

BRESKIN AND CHARLTON PUBLISHING CORP.
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FEBRUARY 1936

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Displays that can take it

BY E. F. LOUGEE

1. One of the most successful "Lucky Strike" displays ever created. Solidly built of wood with laminated plastic wheel and base. Wheel operates automatically, stop and go. Rubber ball runs free with wheel, stopping on black or red as wheel stops.

2. French Line window display built of laminated plastic and plywood. "French Line" etched on colored art glass indirectly lighted from rear. Aircraft propellers revolve with stream of air from fan concealed at right.



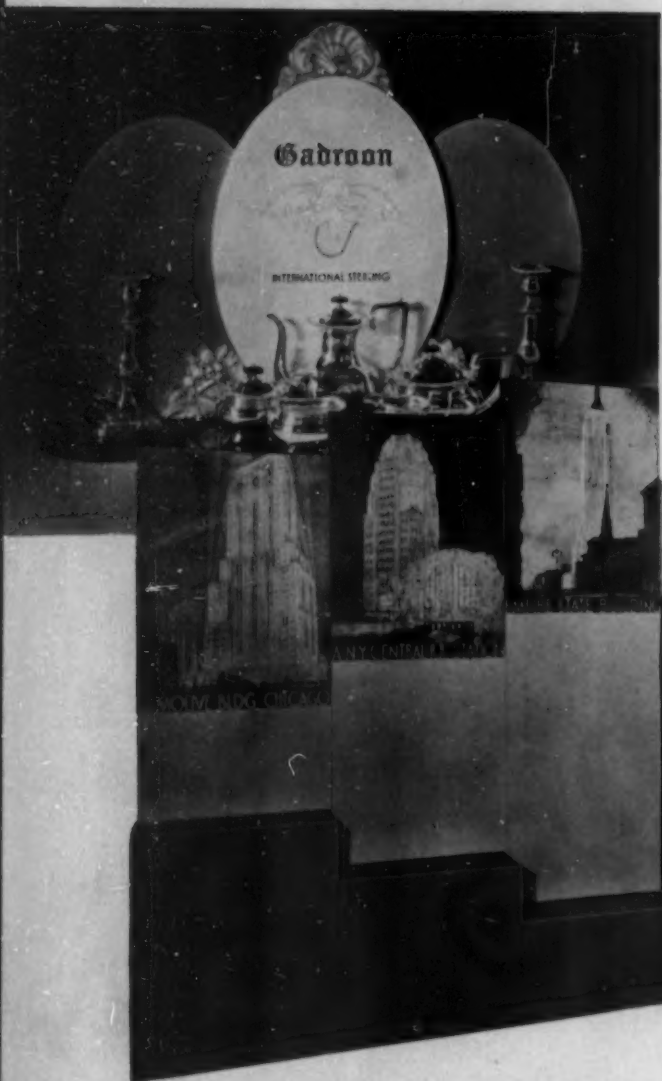
3. Cunard White Star display of wood with laminated plastic veneer which is flexible from 8 ft. to 12 ft. Circle in center panel transparency has flashing arrangement to make sun fade out and in its place appears an attractive girl.

TRAVELING displays like traveling salesmen depend for their success upon their ability to present a neat appearance, tell a convincing sales story, and continue doing it month after month without weakening or losing their "punch." The traveling display, however, is at considerable disadvantage because it cannot get up each morning, shave and put on clean linen. It must be so constructed in the beginning that it keeps up its appearance without these daily refurbishings. It must depend upon the careful (?) handling by a number of persons, some of whom are likely to be a bit careless in this chore because it is only one of many they have to do.

Most displays start out from the factory of their owners with all the glamour and luster such advertisers can give them. They are packed in substantial traveling cases and shipped to the first point of their appearance and usually arrive in good condition. Here they are unpacked and made ready for display in the store window or on the counter. The case is stored away for the time when they shall be shipped along to the next store. And so it goes throughout the life of the display. Here today; there tomorrow;



4



5



6

with plenty of rough traveling and usage between each stop. The success of each one of such displays depends entirely upon how long it "can take it" without becoming the worse for wear and looking shabby. The moment a display becomes "seedy" in appearance its usefulness is over. No merchant welcomes such a display for his show windows. Even if he did, it would be a poor representative of the concern whose message it is created to tell. When this condition is reached, two courses are open to the advertiser: The display must return to the factory for reconditioning and repairs, or it must be thrown away—becoming a total loss. The less often a display is required to return to the factory for repairs, the greater service it renders. The longer the life of the

display in actual service, the better investment it was in the beginning, regardless of its initial cost.

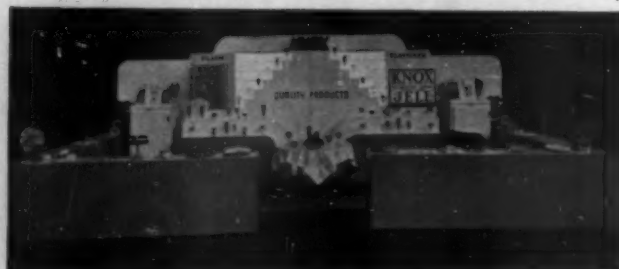
Choosing material for traveling displays, therefore, is a matter of more importance than many concerns are inclined to believe. To begin with, the material should have strength. It should be strong enough to survive handling, packing and shipping about from one place to another. Then it should have luster, or sparkle, that will attract favorable attention when it reaches its point of display. It should have well chosen and carefully combined colors that will remain brilliant. Its finish should remain permanent and be able to resist the shocks and bumps incidental to its use. It should not scratch or mar easily, and it should be capable of frequent cleaning with soap and water.

Plastics of one sort or another, it would seem, are about the only materials that combine all these favorable characteristics. They have been quite generally used by advertisers during the past few years in laminated or veneer form and their greater use in molded form is predicted for the immediate future.

With a keen understanding of the display needs of national advertisers, Franklin (Continued on page 55)

4. Daggett & Ramsdell triple gift display has molded head of plastic material in center. Balance of display is plastic veneer. 5. International Silver Company display of "Gadroon" is laminated plastic construction throughout with molded decoration on top center panel. 6. Jenkins Brothers' valve exhibit, 20 ft. long by 8 ft. high. Deep cut-out letters of plastic veneer. Plastic disc, with valves strapped on, revolves by electric motor. 7. Flexible exhibit booth (20 ft. to 30 ft.) for Knox Gelatine. Made entirely of laminated plastic veneer in blue, cream and black. Transparent lettering opposite each stair-step shelf flashes automatically.

7



Introducing PLASTIC MODES

BY EVE MAIN

SPRING fashion forecasts hint that plastics will blossom out in great profusion. They will complement and individualize spring and summer clothes through smartly designed buttons, buckles, bag ornaments and trim, millinery ornaments, hair ornaments, jewelry and whatnot. Paris, the never failing barometer of fashion trends has swooped down and caught up plastics using them lavishly for spots of color with inspired creations for the coming season. Four Parisian modistes of international prominence have simultaneously selected cast resins for jewelry and accessories. This in itself is significant of its versatility, for exclusiveness, naturally, is one of the first commandments with each modiste. How well they succeed is illustrated in the pieces pictured on the last page of this section—all of plastics, but without the least resemblance to one another.

Each month we plan to snoop about and choose examples of plastic modes in tune with the season. Not that we could possibly include all of them, but enough to show the way fashion winds are blowing. This month we have collected some of the delightful accessories created for Southward faunts that will carry on through the summer. We collected, too, some interesting comments on plastic modes from those who sell them.

De Pinna says: "For sometime we have watched these new plastic things with a quizzical but mild interest to see how they would 'catch on' with a smart public whose demands we are bound to respect. With the arrival this Spring of the Spectra Talon dress fasteners in gay colors to match other plastics accessories there seems to be little doubt that their very practical nature will assure their success in sportswear this coming season."

I. Miller says: "Cellulose covered heels have definitely established themselves in women's high-grade footwear. Especially in simulated leather patterns where they give added life to the shoes because they do not scuff or tear easily. Now that handbags have adopted plastic buckles and ornaments for adornment, there will doubtless be an increased appreciation and acceptance of these new materials by those who buy not alone for style but for long and satisfactory service as well."

Lilly Daché says: "We have used these materials you call 'plastics' quite generally for millinery ornaments and trim. We like them because they are so colorful and present such unique designs that actually they are equally effective on sport, cocktail or dinner hats. They appear frequently in our Spring creations. We have every reason to believe they will prove as acceptable as in the past." (We will show you some of these Lilly Daché hats in March)

CRUISES go down and 'round, too, and come out in Nassau, Bermuda and all points South carrying crowds of winter vacationists walking out—or rather sailing out—on zero weather blizzards and snow for a brief interlude of tropical sunshine and glimpses of strange lands. By special invitation plastics are going along with them, for they are included in one way or another with practically every fresh new cruise outfit. Cruise jewelry particularly shot ahead to a good start early in this roving season and is still going strong. And why not, with such an endless variety of nautically flavored pieces that enter wholeheartedly into the spirit of sea-going and beach clothes. Here are a few of the many interesting ways in which plastics travel.

1. Prim resinoid buckles of translucent amber color fittingly ornament this natural linen bag with London tan leather gores. Equally chic is the same bag in all white calfskin with opaque white plastic buckles. (Bag—Hill Bag Mfg. Co.)

2. Roomy pouch type bag of white calfskin topped off with square cast resin handles. (Bag—Hill Bag Mfg. Co.)

3. Ships that used to pass in the night are now caught and securely anchored for daytime wear at neckline or belt by a pin set diagonally across the back. Ships are of white plastic with red or blue trim. (Items 5, 6, and 7 from Cohn & Rosenberger, Inc.)

4. Some prefer the notched wheel design of white resinoid with red trim, also made up in complete sets.

5. Necklace of dark blue plastic beads

from which dangles a triangular shaped pendant with dark blue background for white anchor with red trim. Three rows of beads with the same triangular anchor motif on top are strung on elastic thread forming a bracelet that fits snugly around the wrist. Clips, pins and earrings complete the set.

6. Alligator shoes and matching bag in new sport tan shade, than which nothing is smarter for the favored tailored suit ensemble. Shoes feature wide buckle straps and scuffless cellulose covered heels perfectly matching the shoe grain. Calfskin bag in alligator grain is open top vagabond style available in a variety of colors. (Shoes—Andrew Geller, Bag—Nat Lewis)

7. Pert penguin, swimming sea horse and fat fish of wood and gold metal mounted on red, white or blue cast resin background perch jauntily on hat, dress or sweater. Matching sets are available. (L. Einstein & Co.)

8. Two piece jacket dress of rayon with soft wool texture distinguished by four jacket pockets closed with bright red plastic slide fasteners and buttons to match. Felt hat with back strap and saucy quill; alligator bag and shoes of white buck with calfskin trim, accentuate the smartness of this outfit. (Spectra pocket fasteners—Talon, Hat—Howard Hodge, Bag—Nat Lewis, Shoes—Cam-meyer, Dress—Mutual Rosenbloom.)

9. Swanky deb satchel of white pyroxylin, black bottom and double top handle with silver metal attachments. To go with it, white kid sport gloves have patent cuff emphasized by small silver ball trim. (Bag—M. J. Fox, Gloves—Aris)

SAKS FIFTH AVENUE 6

5 BLOOMINGDALE

DU PONT

GRACE LINE PHOTO

7



SAKS FIFTH AVENUE

DE PINNA

8



9



DU PONT

ONT

Paris presents plastics for Spring

THE exciting news that French fashion houses have been casting especially interested eyes upon plastics for trimming Spring wardrobes is confirmed by the arrival of a striking group of plastic jewelry and accessories designed by four outstanding Parisian couturiers, Schiaparelli, Vionnet, Hubert and Vienne. The pieces represent four distinctly different interpretations all leaning toward a smart bulkiness executed in minute detail.

1. Schiaparelli dramatizes a simple town frock of black waffle jersey by a buckle of intricately carved black cast resin and gold metal. On the two rectangular plaques with curved edges frolics a small squirrel through a skillfully carved forest of nut laden trees. Semi-circular pieces of gold metal bind either end of the

plaques. The same motif is used in matching bracelet and clip.

2. Vionnet contributes an exquisite buckle of cloudy prystal in an exact representation of white jade consisting of two rectangular plaques delicately carved to represent the sacred chrysanthemum of Japan, clasped by means of a small hook on one plaque which slips through an opening in the frame of the other.

3. Hubert presents a "Jumbo" buckle: two elephants' heads in chocolate brown cast resin with ivory tusks and eyes for effective color contrast. With a droll expression one elephant slips his slightly curved trunk through the rounded trunk of the other, clasp the buckle firmly.

4. Vienne comes to the front with a bright jade green plastic lion's head in shield shape, boasting jet eyes and a matching ring through its mouth. Vienne uses this clip to hold a loop-over girdle in place at the front of her gown but it also provides interesting possibilities for accenting a trick neckline.

Plastics in aviation

BY BLAINE STUBBLEFIELD

ONE morning 17 years ago an army officer taxied a spanking new airplane onto the line. It looked just like all the other Jennies at Kelly Field. But somehow it was different. A group of Cadets gathered around as the officer explained the new propeller. It was made of laminated phenolic.

"It looks," observed one boy aviator, "like canvas rolled up and soaked with glue."

"If that's glue it's tougher than a bull's horn," said a Cadet from Idaho, springing the blade with all his weight.

Those same cadets had already been amazed, when doing pre-flying shop work, to find that airplane "dope" made ordinary wing fabric as tough as rawhide and even more impervious to water absorption.

Probably no one explained that the laminated phenolic propeller from Westinghouse and the cellulose "dope" from duPont were both based on a new synthetic that was destined to rewrite builders' lore on land and sea and in the air. Today the laminated propeller is in retirement (perhaps temporarily) and the doped fabric seems to be on its way out, but they were the beginning of the story

of plastics in the air. A story that will never end.

Another early entry in the diary of aeronautical engineering was the phenolic molded distributor head made during the war for the famous Liberty motor. Incidentally, it was for the Liberty motor that the second phenolic laminated propeller was built. Designed for 400 horsepower, it came sound out of a



United Air Liner at right; and below is a group of flight and navigation instruments in which plastics have largely replaced metals because of their lighter weight and functional advantages



1920 hp. test. It was molded in a press of 1,000 tons capacity. These propellers had greater strength than wood, better efficiency, better resistance to wear due to tall grass, flying sand, and rain, made less noise, and lasted many times longer. They were unaffected by climate, wet or dry. Due to the rapid change in air screw design, however, and to limited production, the cost of molds ended the making of such "props." If airplanes can be made and sold in large numbers it is probable that these laminated propellers will be seen again.

Some of the early applications of plastics in aircraft were simply carry-overs from automobile design practice, while others grew out of striving to solve new problems. In 1919, distributor heads, magnetos, conductor terminals, spark plugs, switches, instrument cases, and terminal sleeves were listed among aviation parts being made of phenolic materials.

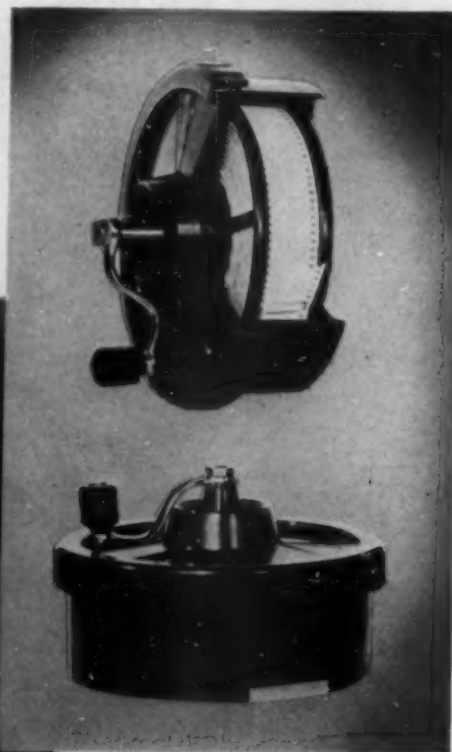
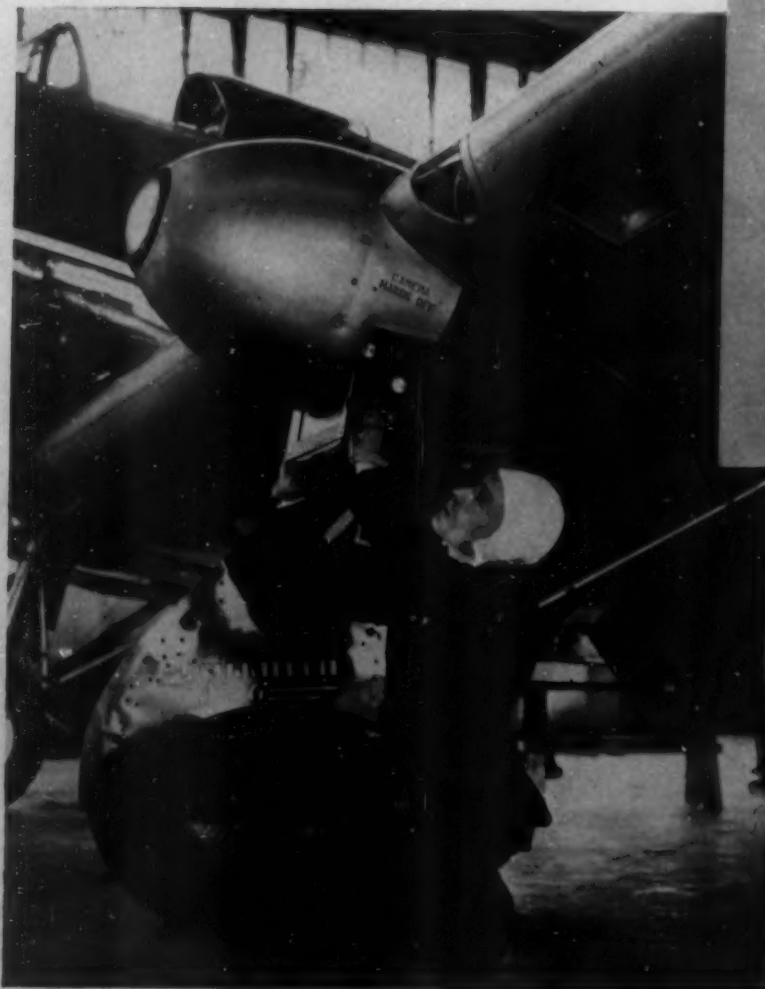
Formica Insulation Co. developed a new ball bearing aileron pulley which relieves friction, keeps in

line without wobbling, and retains lubricant at a temperature of 120 deg. F., and the same lubricant will operate efficiently at a temperature of minus 20.

In 1919, because of its ability to resist erosion and corrosion, plastic laminated began to make its appearance in bilge drain plugs, (flying boats and pontoons) in water stops in corrugated doors and bulkheads, and in chafing blocks for haul pipe. Then came radio communication between plane and ground station, the achievement that made today's U. S. 20,000 mile passenger, mail and express airway system possible, and again plastics played an essential part in this rapid development.

United Air Lines, for example, developed 34 ground transmitting and receiving radio telephone stations on their 3,000 mile mid-transcontinental route, to maintain constant voice communication between the ground and the pilots of planes in flight. Phenolic laminated and molded are integral parts of these stations and also of the receivers and transmit-

Fairchild Aerial Camera in which phenolics play an important part. Using Bakelite for the two film guide rollers of each magazine has been found to reduce trouble which formerly occurred. At the right is the Davidge Film Laboratory developing tank—all molded



ters in a fleet of approximately 55 ships.

In airplane radio sets, sub base panels, face panels, tube sockets, regeneration control, fixed condensers, name plates, mountings, coils, binding posts, knobs, dials, and rheostat handles are made of plastic. Sometimes the radio operator's floor is of plastic to prevent his body grounding on the ship's metal frame.

Making the distributor block, cap and spool on aircraft magnetos from phenolic molded makes it possible to form them to exact dimensions and assemble them without machining or fitting. Some magnetos, standard equipment on several aircraft engines, have distributor

heads and rotors made of the same phenolic material.

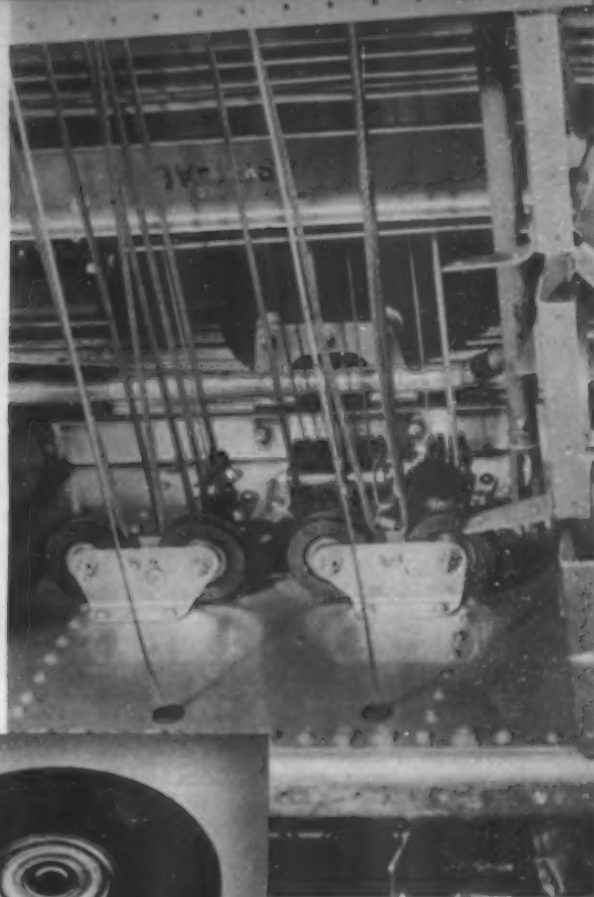
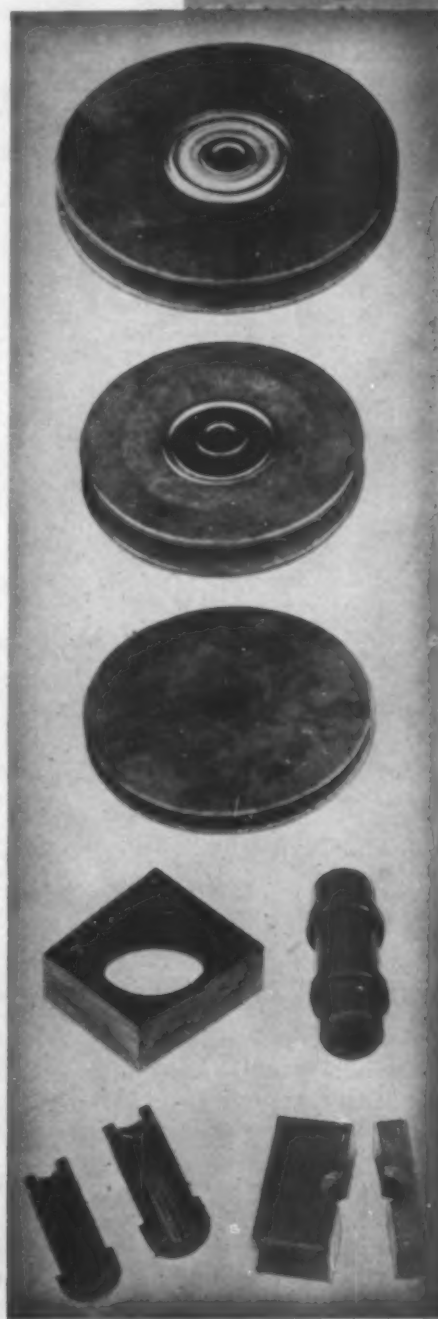
Many of the precision instruments for air navigation, made by Pioneer Instrument Co., and others, make use of plastic materials. In all electric and radio-electric work aboard aircraft, the high non-conductivity of plastics (beside their other desirable characteristics) is valuable due to the seriousness of any failure of communication or ignition, and also due to the hazard of fires that might result from short circuits with disastrous results.

Along with radio communications on the airlines came improvements in lighting the airways, and synthetics also did a job there. Airways Equipment Corporation last June announced a new airport boundary light, intended for use on the majority of 10,000 new airports built by P.W.A. at points not having electric current. The bulb is fed by a single dry cell. The conical shell of the marker is made of phenolic laminated so as to withstand perpetual exposure to the weather in all climates.

Recent among aids to flight is the airway beacon, a device that projects a narrow beam of radio-activity, in effect, a track which the pilot follows with his instruments, through dark and storm to his destination. The Kolster Radio beacon uses laminated tubing for the forms upon which inductances are wound, and for panels for mounting the various units that require insulation of a dependable nature.

"Materials of phenol composition for aircraft parts are comparatively new, with fiber and metal materials having been employed up until a few years ago," says the Boeing Aircraft Company, one of the leading makers of both military and commercial airplanes. Boeing officials point out that plastics have a high dielectric strength, are readily machinable, do not absorb moisture, have a high polish finish, and also are desirable from a dura- (Continued on page 58)

Laminated phenolic ball bearing aileron pulleys and bushings with canvas base. Bushings will retain lubricant at a temperature of 120 degrees F. and same lubricant will work efficiently at minus 20





Molded Oriental tableware and dishes are replacing time-honored lacquered wood products. There is little tendency for these modern molded pieces, which are lacquered by hand, to warp, crack, swell or break. The lamp at the left, excluding the metal contact points for electrical wiring, is entirely molded.

Plastics in Japan

BY DAVID S. KUSANOBU

THE historic interruption of Japanese seclusion by Admiral Perry in 1854 disclosed to a startled world a unique artistic development of such excellence that it has gained its place among world treasures. The resulting cyclonic influx of Occidental industrial progress has created a kaleidoscopic island empire. The face of Japan is changing constantly, and its people's innate appreciation of beauty has discovered new modes of expression. The artistic tradition of Japanese craftsmen is daily finding outlets through the medium of plastics.

Cast resinoids are an excellent vehicle for the technique of the master carver. Since time and labor are not such essential requisites to profitable production in the "Land of the Rising Sun," there is more op-

portunity to create custom carvings. Items such as the handles of walking sticks and ornate jewelry and powder boxes lend themselves most readily to this craftsmanship. The illustrated canes are an example of detailed hand carving of white, opaque cast resinoid, which closely simulates work in ivory. The shafts are also plastic; either a solid laminated rod, or a lamination of about a quarter of an inch over a wooden core.

A most interesting effect may be obtained by a skilled carver with a block of cast resinoid sheets in a variety of colors. By cementing several sheets, the artist is offered the opportunity of creating a bas-relief with the foreground, the subject, and the background in several harmonious colors. As a simple illustration,

if three sheets (one blue, one brown and one green) were laminated, then carved, the result could be a brown house set on the knoll of a green hill with a blue sky for a background. By careful planning, marvelously ornate and intricate results may be obtained with this unusual application of plastics.

Several inches of laminated tubing fitted to a circular base of the same material may form the body of a flower vase. This is covered with a basket-weave of laminated paper-thin strips of a contrasting color. The final result closely resembles similar products of natural woods, but affords a durability previously unknown. The possibility of leakage is eliminated by sealing the joints on the inside with a coating of phenolic resin.

The arranging of flowers is a ceremonious art in Japan. It is taught in schools devoted specifically to this subject, and is a required accomplishment of every young lady of refinement. Flower arranging may now be done in baskets woven from laminated plastics. The thin strips of laminated are easily adapted to the weaver's art.

Molded tableware is now competing with the lacquered wood products known through past centuries. The various styles of dishes peculiar to the Orient are now supplemented by demi-tasse and cocktail sets, finger-bowls and bon-bon trays. Practically all these items are artistically finished with elaborate designing in gold and colored lacquers. After the piece is taken from the mold, it is treated to roughen the surface so that the lacquer will adhere more tenaciously. The lacquer work is done entirely by hand. Modern methods have reduced the finishing time required from what was formerly years to approximately two months. The finished product cannot be distinguished from the traditional work in wood, but for the welcomed absence of warping, cracking, swelling, and breaking. An interesting example of Japanese handicraft is the molded electric lamp. The entire unit is molded, even the lamp socket.

Molded phenolic has been added to the lengthy list of materials adaptable for Obi (sash) buckles. In this application the material has supplemented precious metals, jade, coral, porcelain, bone, and similar products. Molding is done in two or three colors from intricately carved molds depicting traditional subjects.

The novelty field has been well covered in its many (Continued on page 63)

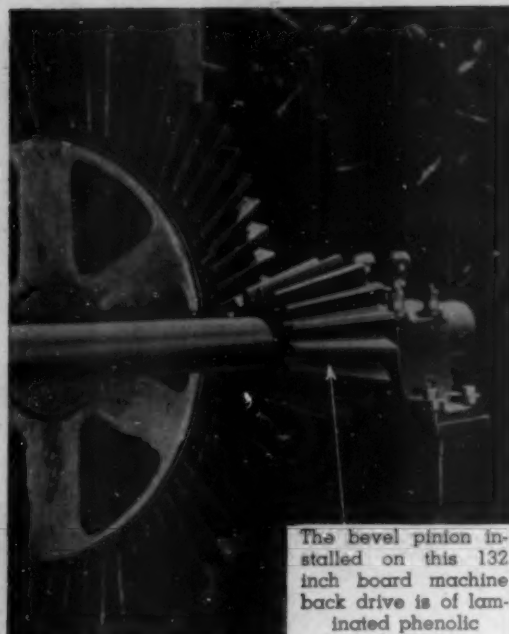


1. Handles on these walking sticks were hand carved from opaque ivory cast resinoids by Japanese artists. Shafts are made of laminated rods. 2. Japanese "baby grand" piano-cigar humidor is molded in sections which are easily assembled. 3. Japanese vase of laminated tubing and base decorated with woven laminated strips cemented in place with phenolic varnish. 4. Baskets woven from paper thin strips of laminated assist in the ceremonial art of arranging flowers in Japan

Laminated gears are both strong and silent

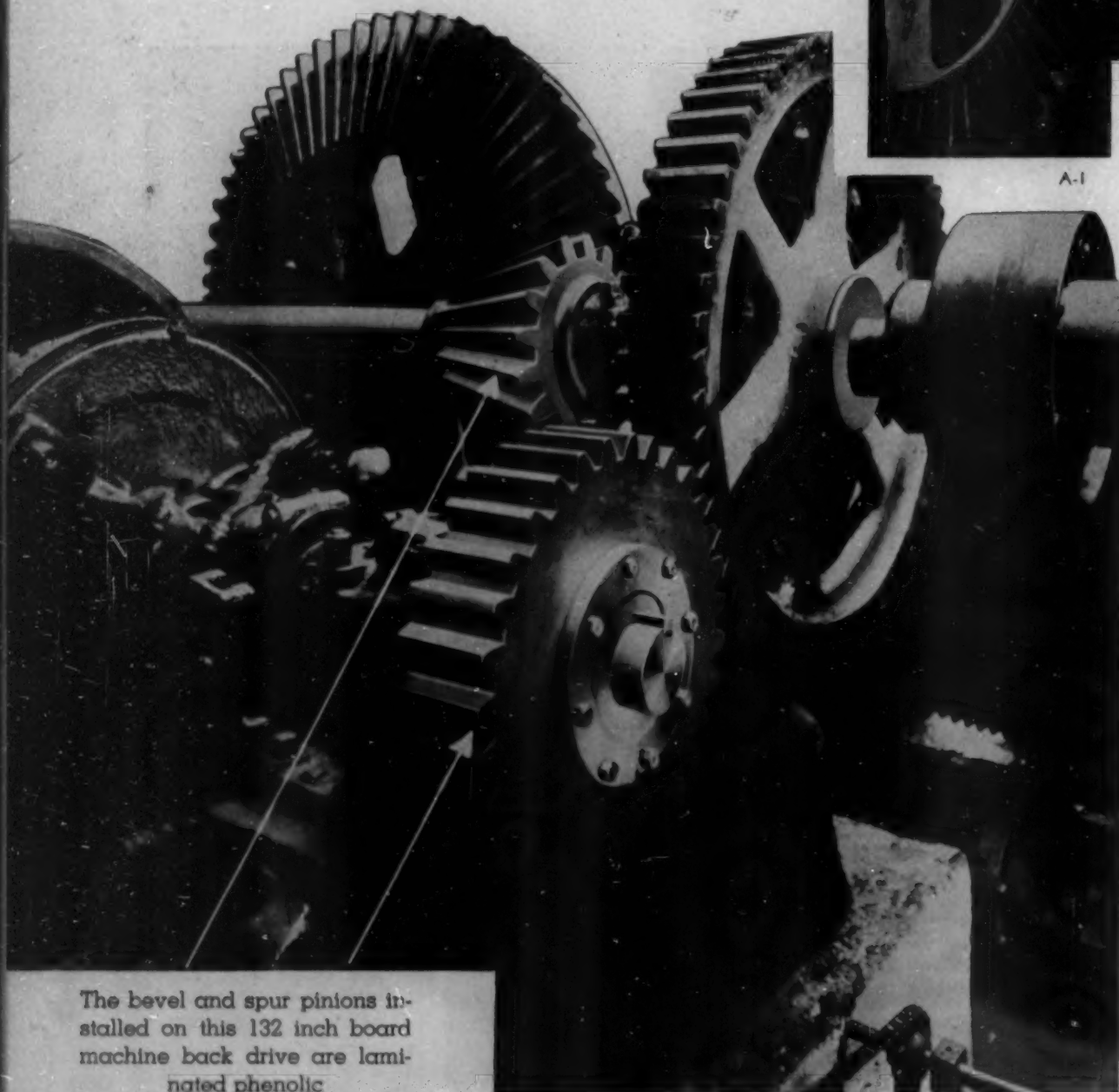
IT SEEMS almost incredible that sheets of paper or even fabric when dipped in phenolic resin, dried, and pressed together under heat acquire greater strength than many metals. But such is the case, and furthermore, these laminated phenolics surpass many metals in wearing qualities especially where metals depend upon lubrication for their length of life. For a number of years, phenolic laminations have been cut into gears where they have replaced bronze and sometimes steel with increased efficiency. The automobile industry has made excellent use of such laminated materials for timing gears where accuracy and silence are to be desired and dependable service maintained.

Gears, of course, are not the only applications for



The bevel pinion installed on this 132 inch board machine back drive is of laminated phenolic

A-1



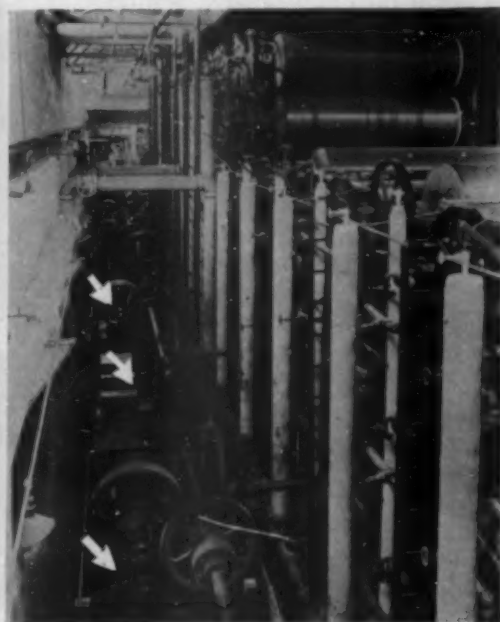
The bevel and spur pinions installed on this 132 inch board machine back drive are laminated phenolic

A-2

laminated phenolics. We have frequently presented their various uses in these columns. We have shown how very generally they are being used in building and ship construction and decoration. Within the past few months we have demonstrated their uses in high frequency electrical work where they have largely replaced fiber and other materials because of their superior dielectric properties and permanence of service under exacting conditions. Laminations of resin dipped materials are generally made in sheets and then pressed together under tremendous pressure and heat where they become fused into an insoluble mass of $\frac{1}{8}$ in. to several inches thick depending upon the number of sheets pressed together at one time. Gears are cut from these thick sheets or blocks much

tion affects the operation of the entire plant. A shut-down on any part necessitates a complete shut-down of the entire unit. Through installation of laminated gears at strategic points where trouble most frequently occurred, these shut-downs have been largely eliminated with resulting increase of production and lowering of costs. Besides this, the almost unbearable noise customary in such mills has been considerably reduced through the splendid performance of laminated gears.

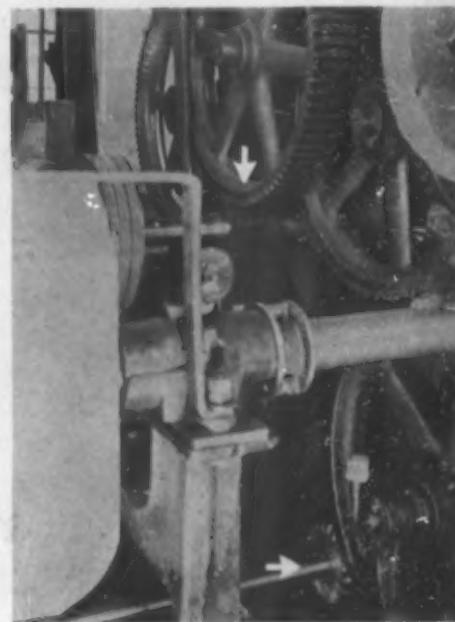
Picture "A" is a photograph of a 132 in. paper board machine showing the drying section, together with the drive-in shafts and back drives of a machine in the Lockland mills. This machine has a capacity of 165 tons of folding box board every twenty-four hours, and consists of seven forming cylinders, wet presses,



A



B



C

as they are cut from steel and with the same type of machinery. Therefore, gears of any size or kind become available. The nature of the materials give them strength and toughness unequalled by metals and because of their peculiar properties, they are unusually quiet in operation.

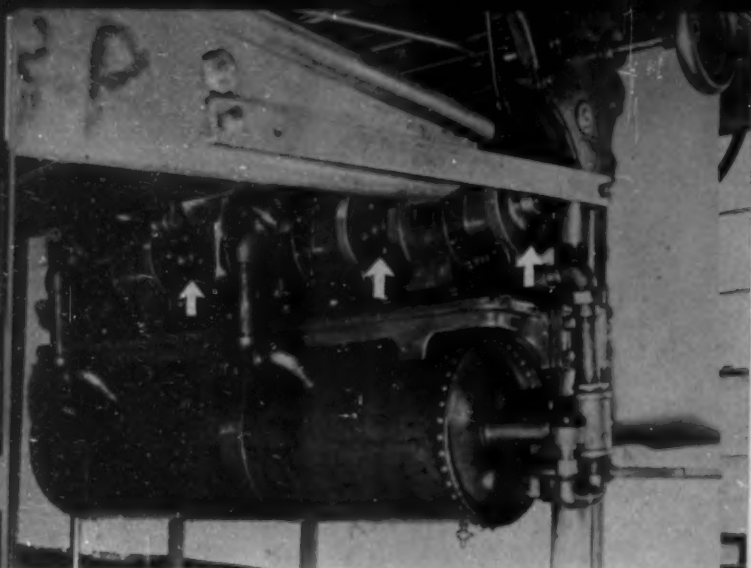
Laminated phenolic gears are rapidly assuming prominence in the operation of heavy machinery where continuous production is essential to the successful operation of the plant. In order to effectively demonstrate their improved performance over other gears, we have chosen a typical installation operating under severe conditions where they have proved their merit. The Gardner-Richardson Company, operating large paper board plants in Lockland (Cincinnati) and Middletown, Ohio, is nationally known as one of the largest and most efficient producers of folding boxes in the United States. This company has pioneered in bringing its product to a high state of perfection and its mills are among the most modern in the country. These illustrations will show some interesting examples of the use of laminated gears recently installed in these plants.

A paper board mill represents an investment of several million dollars and, working as a continuous unit of production, each section or part of the opera-

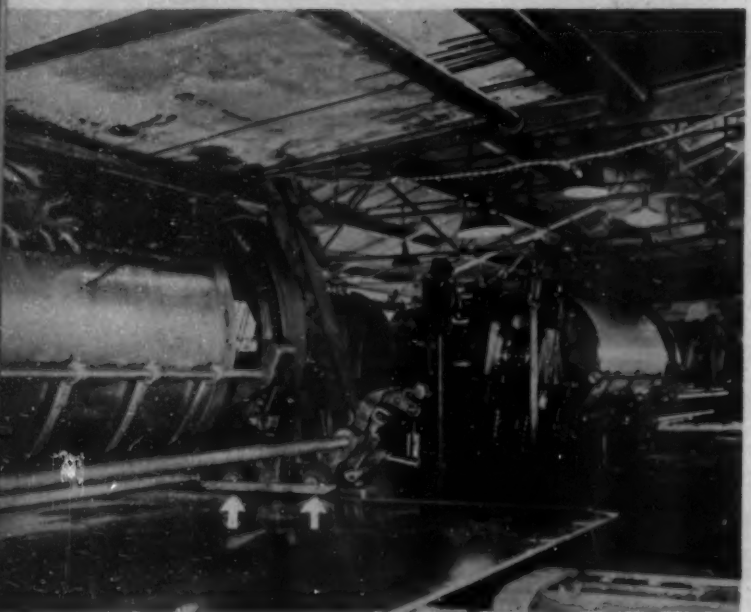
and 124-42 in. driers of 136 in. face. The power requirements on such a machine, which is over three hundred feet long are tremendous. The back drives, shown in the photograph, each drive a section of this vast machine. The spur and bevel pinions on these drives were formerly made of cut steel, but because of the heavy duty imposed upon them were subject to frequent replacement and the entire machine room was a bedlam of noise resulting from them.

Picture "A-1" and "A-2" show a close-up of the laminated pinions which have replaced those formerly of steel. The bevel pinions have a 10 in. face, $2\frac{1}{2}$ in. pitch, and 16 teeth, and the spur pinions have a $4\frac{1}{2}$ in. face with 31 teeth and $1\frac{3}{4}$ diametrical pitch. These pinions of laminated phenolic plastics are on continuous twenty-four hour duty and have shown absolutely no wear in more than two years of service. They have outlasted several times over the gears and pinions they replaced and are still going strong. But, best of all, the noise has been eliminated in the operation and costly replacements with incidental shut-downs and loss of production have become a thing of the past.

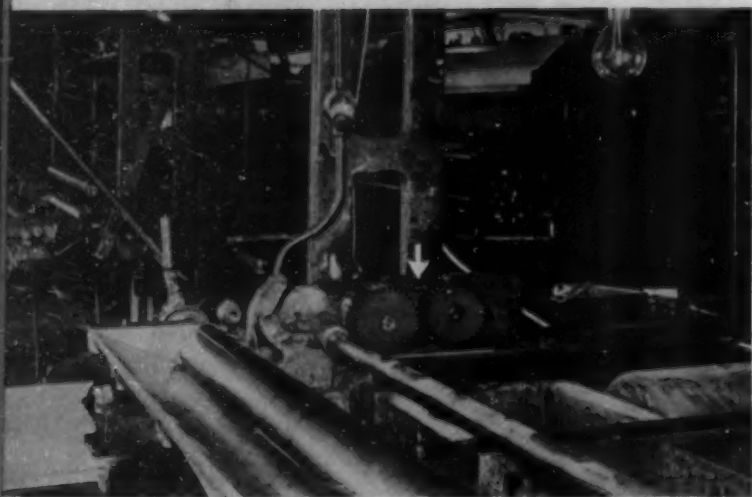
In picture "B" may be seen a sleeve type bearing installed on a felt whipper roll on the wet end of the same board machine. The stalactites of wet paper



D



E



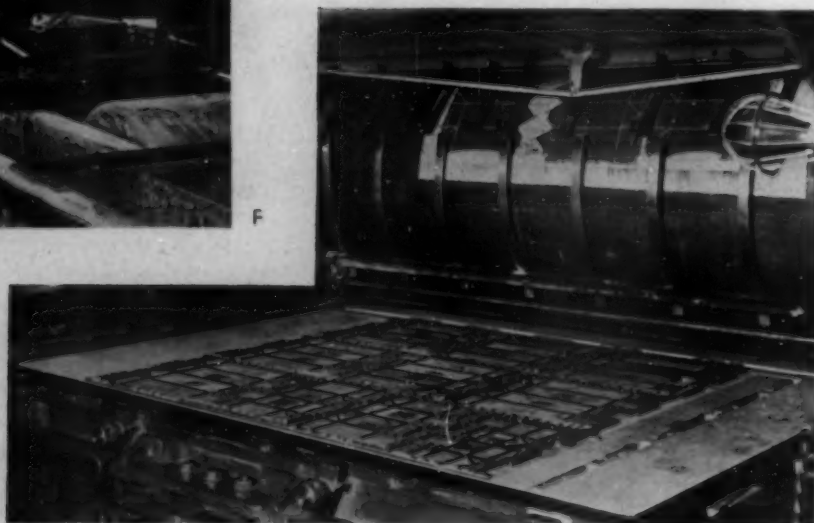
F

pulp dropping over this bearing give some indication of the arduous conditions under which it performs. The tension of the 152 in. wide blanket riding on this roll under these conditions makes a service requirement throughout the steady twenty-four hour operation which previously necessitated a replacement every five weeks when the finest metal bearings were used. This bearing is now made from Insurok, grade CG, and has been in use more than nine months, running almost continuously in water and with no other lubrication.

Picture "C" shows the laminated pinions installed on the cutter and slitter drives of the same paper machine. The function of this cutter is to take the continuous web of board, eleven feet in width, slit it to the proper width and cut it into proper lengths after it has passed over the drivers and through the calenders. Exact speed and accuracy must be maintained at all times so there is no variation in the length and width of the finished sheets. The pinions operate at a speed of 600 to 700 r.p.m. and have outlasted pinions of other materials many times over.

After the folding box board has been cut to sheet size, it is transferred to the printing and cutting departments of this same plant where the operations of color printing, cutting, creasing and glueing are performed. Pictures "E" and "F" show the installations of laminated gears on some of the printing presses in the Gardner-Richardson Company's plant. The gears in picture "F" are known as intermediate angle roller drive gears. They reverse twice for every sheet of paper that goes over the press and their continuous reverse motion subjects them to very strenuous wear and tear. These laminated gears have reduced noise and have increased several times over, the average life of the metal gears they replaced. The gears in picture "E" are two of the form roller rack pinion gears which are also installed on this battery of presses.

Each of the printing and cutting presses are equipped with automatic sheet feeders of the suction and pressure type, illustrated in picture "D". Previous to the installation of laminated phenolics, the replacements of metal gears averaged twelve gears per month on ten of these feeders. Conditions are so improved through the use of laminated gears that a replacement has become almost a rarity. (Continued on page 57)



G



FIG. 3. Threads may be molded integrally with any plastic part and accuracy equivalent to threaded metal may be obtained if molds are properly made



FIG. 2

Molded threads

BY R. ROCHESTER

IT HAS long been generally known to users of molded plastics that threads for bottle caps, cosmetic jars, and other items where no great degree of accuracy was required were practical and in common use, but there has been a general feeling among users of more or less technical articles that molded threads could not be held to tolerances comparable to that which could be secured in either the die cast piece or the machined piece.

In investigating this condition, it has been found that molded threads are not only practical, but can be held to a high degree of accuracy, probably more accurate than can be consistently done by a machine. There is no limitation to either size of the piece to be threaded whether the thread is required inside or outside or both, and the shape of the thread offers no problem to the molder familiar with this type of molding.

As an example of great accuracy, there is shown herewith, in Fig. 1, a molded coil form used in short wave radio of the highest technical nature. It will be noted that between each of the coarse threads there is a fine thread, and the root diameter tolerance on these threads is .0005. The molding of this type of thread eliminated the operation of attempting to thread these coil forms in a machine and hold them to any reasonable degree of accuracy, as is shown in left hand rear spool—Fig. 1, which is a typical coil form machined for the same type of thread that is shown in the spool in front. In this particular piece the machined thread was not practical due to the fact that the resin skin was broken in machining, which left the piece to a certain extent hygroscopic, and with this condition, destroyed its efficiency for airplane radio work due to its absorption of moisture in humid climates. On the other hand, with the molded thread, the resin skin was not destroyed and the base of the thread was in as good condition as the surface of the piece which precluded the possibility of moisture absorption, thereby retaining and permanently assuring the dielectric strength of the piece throughout its life.



FIG. 1. Front left spool has molded thread. Rear left was cut after molding with less satisfactory result. The spools at the right are shown with the wire wound in place in the molded grooves

A further interesting point relative to the threads on the double threaded coil in Fig. 1 is the fact that the beginning of the thread at the bottom was held to within .001 of an inch from the base of the coil; and with the tolerance of .0005 of an inch, the length of wire when on the coil form was within $\frac{1}{16}$ in. of the same length at all times. These coil forms show perhaps the highest degree of accuracy attainable in the molding of threads.

On the other hand, there is shown in Fig. 2, a threaded thermos jug cover, and the threading of this piece is so accurately done that when it is put together the joint of the two pieces is not noticeable. The diameter of this jug is $5\frac{1}{2}$ in. and it has 24 threads to the inch.

Fig. 3 shows a long and extremely accurate thread which is used in the spinning industry. This piece, when threaded into its female member revolves at about 15,000 revolutions per minute, and a high degree of accuracy must be maintained in order that vibration may be eliminated.

Threads, worms, and cams are being commonly molded and held to tolerances comparable with those made from steel, and in many cases with added advantages. Molded threads have no sharp cutting edges.

Editorial comment

THE transcending importance of plastic materials in Modes of the Moment is clearly evidenced in retail shops and in the pages of almost any magazine devoted to the presentation of feminine fashions. Introduced within a comparatively short time as inexpensive trinkets and knickknacks that could be turned out rapidly at small cost, plastics have arisen through intelligent handling and design to take their place among the more elegant items of personal adornment and accessory decoration. Their recognition this season by designers of international repute gives them an entirely new status in the smart world of fashion. In order to promote a better understanding and appreciation of these modern materials among both manufacturers who employ and fabricate them, and retailers upon whom they depend for successful presentation, we introduce in this issue "Plastic Modes."

It is not our intent nor purpose to attempt a complete résumé of Plastic Modes each month, but rather to imply by pictured suggestions a few of the myriad opportunities offered creators of fashion by these versatile plastics—so frequently called "composition." And to indicate by illustration the sprightly and exciting ways in which they are being handled by designers whose reputations for success preclude any question of their judgment or wisdom in choosing appropriate materials.

Colorful plastics in both cast and molded form appear frequently this Spring as a motif of ornamentation on much of the approved sportswear. Accessories, too, have taken every advantage of their matching possibilities until it is quite common in the better shops to find a perfect continuity between the decorative motif of hat, suit, dress, bag, jewelry, and shoes. Or failing this, complete sets of clips, pins, buckles, buttons, bracelets and earrings are amply provided.

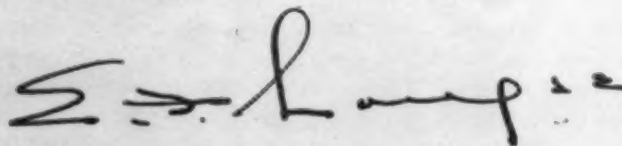
Not only do designers and accessory manufacturers exhibit keen appreciation of plastics as style materials, but the more prominent retailers are featuring them as favorite leaders in their accessory groups. It is a matter of more than passing comment that these accessories are being designed with rare excellence and beauty which brings them to a level of acceptance and importance they had not previously attained in the field of fashion. "Plastic Modes" is designed to further this appreciation and to inspire and encourage a deeper investigation of plastics for functional and decorative applications.

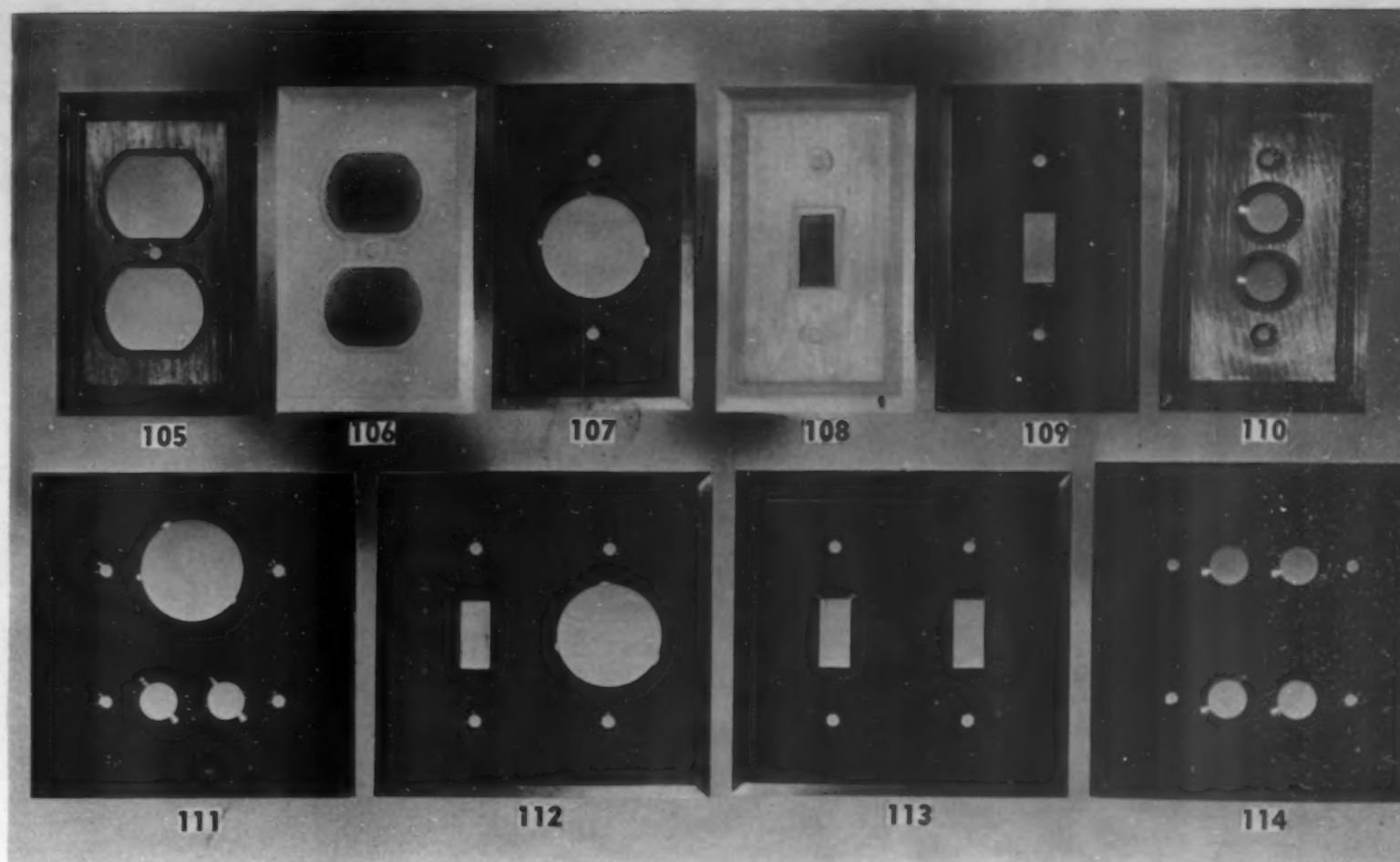
AN ARTICLE appears elsewhere in this issue which gives valuable information on choosing the right molding materials for the manufacture of plastic parts. Its aim is not to indicate the particular choice of any one plastic, but rather to point out the advantages and limitations of all phenolic and urea molding compounds and the complexities of their natures. And to bring emphasis to the fact that all plastics do not possess identical properties in their physical make-up. It should be found helpful not only to those who are considering the use of plastics for the first time, but to those purchasing agents and engineers who for one reason or another have found occasion to "cuss" them for some real or fancied failure to perform according to specification.

When such failures occur, they can almost always be traced to some lack of complete understanding between the buyer and the molder. Some failure, perhaps on the part of the buyer, to clearly indicate in advance just how such parts are to be used and under what circumstances and conditions. Plastics, probably more than any other basic materials are easily misunderstood because of their chemical composition. For this reason it becomes imperative that manufacturers who would choose plastics wisely must absorb some knowledge of their diversified properties or else rely entirely upon the knowledge and experience of the molder in whose hands orders are placed for execution.

It must be remembered, too, that plastic materials are being constantly improved. New demands are forever bringing forth new formulas. Things that were considered impossible yesterday are being done without difficulty today. Problems that arise today will be solved tomorrow with equal facility. Molders and material suppliers are constantly overcoming the minor difficulties that are bound to creep into applications that have not been tried before. But this does not mean that plastics have not been substantially established in thousands of uses. They have turned the methods of many manufacturers inside out and given them a better product as a bonus.

It is the business of molders to keep abreast of these developments. They know what can—and what cannot—be done with plastics. They know which methods are economical and which are not. They know which material to choose in order to obtain the best possible results from the part to be manufactured. When buyers base their requests for quotations upon a complete revelation of ALL the facts, dissatisfaction and disappointments are rare. To this end, the article "Choosing the right molding material" should be distinctly helpful.





Stock molds

SHEET FIVE

ARCHITECTS and builders will be glad to know they can get molded plastic escutcheon plates without initial mold costs where exclusive design is not required. A request on your business letterhead will bring a sample of any of these plates and prices in any quantity. Mention sheet number and item number when writing please

105. Double convenience outlet plate with machined line finish and small decorative border. 4 7/16 in. by 2 11/16 inches

106. Same as number 105 but with a sanded finish panel and plain border. Has one drilled hole for attachment screw

107. Single convenience outlet with sanded finish panel. 4 7/16 in. by 2 11/16 inches

108. Single rocker switch holder 4 7/16 in. long by 2 11/16 in. wide with machined line finish and decorative border

109. Same as number 108 but with a sanded finish panel and a plain border

110. Twin push button switch holder with machined line finish and two holes for attachment screws, 4 7/16 in. long and 2 11/16 in. wide

111. Twin push button plate combined with a single convenience outlet. 4 1/2 in. long by 4 7/16 in. wide. Has a machined finish with fine lines and a designed border

112. Single rocker plate combined with a convenience outlet. Has a sanded finish and four screw openings. About 4 1/2 in. square

113. Double rocker switch holder with machined finish. 4 1/2 in. by 4 7/16 inches

114. Double twin push button switch holder with four drilled holes for attachment screws. The plate is 4 7/16 in. by 4 1/2 in. with a sanded finish and plain border

Address all inquiries to Stock Mold Department, Modern Plastics, 425 Fourth Avenue, N. Y. C. All molders are invited to send samples from stock molds to appear on this page as space permits.

WORTH FILING

Stock molds

SHEET SIX

WITH the exception of number 52, these boxes are all made with telescope covers and are used generally as toilet fittings in traveling cases. Number 47 has been used recently for packaging a new razor. All are available without mold cost at nominal prices even in small quantities. Samples will be mailed on request.

46. $5\frac{5}{8}$ in. by $2\frac{3}{8}$ in. by $1\frac{1}{8}$ in. deep inside. Cover fits snugly and reaches nearly to the bottom of box when closed.

47. This is shown with cover removed. $3\frac{1}{8}$ in. by $2\frac{1}{8}$ in. by $1\frac{1}{8}$ in. deep inside. Cover is provided with thumb grip for easy removal.

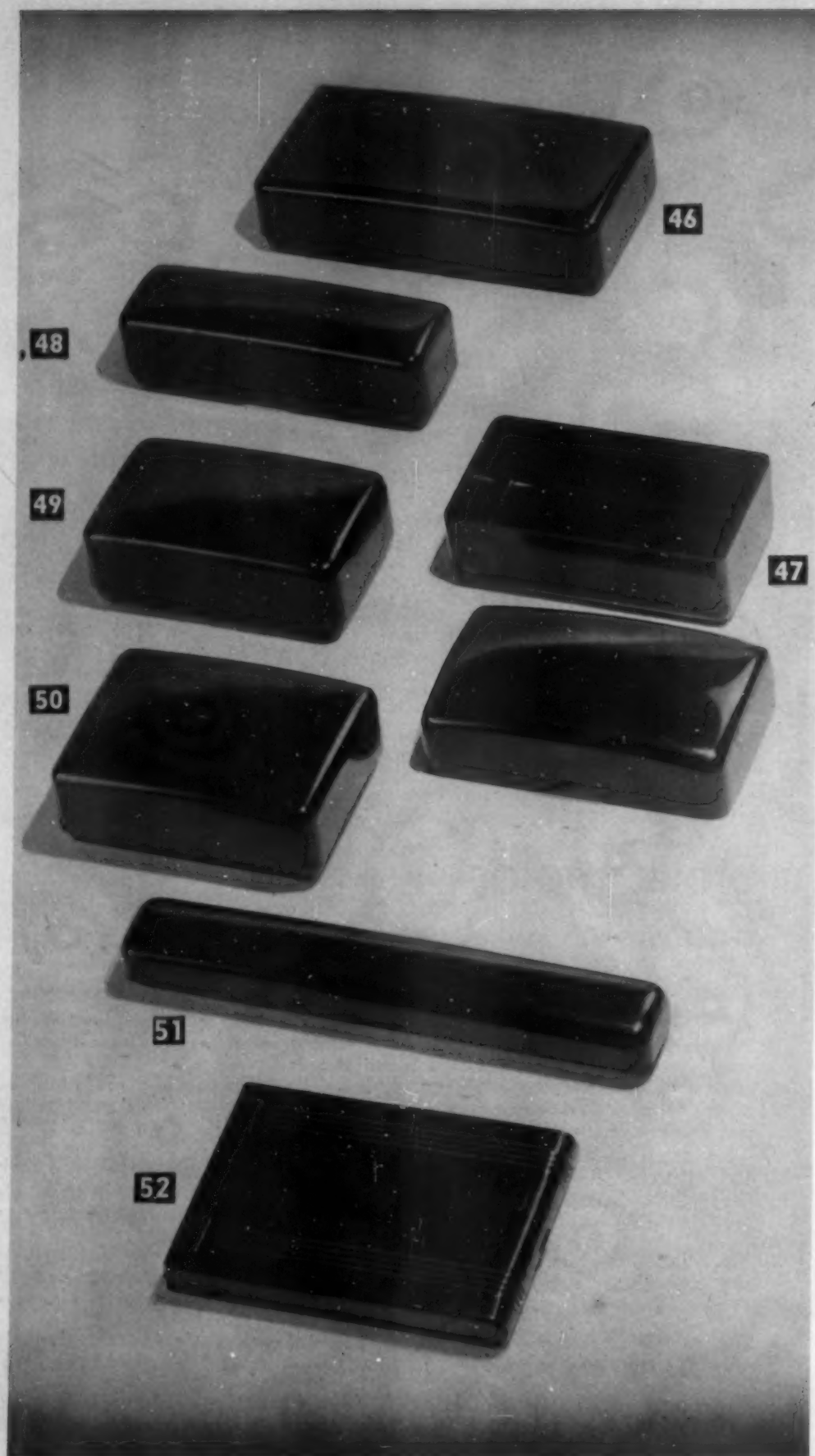
48. $4\frac{1}{2}$ in. by $1\frac{1}{4}$ in. by $1\frac{1}{8}$ in. deep inside. All corners are slightly rounded on top.

49. $3\frac{1}{2}$ in. by 2 in. by $1\frac{1}{8}$ in. deep inside measurements.

50. $3\frac{3}{8}$ in. by $2\frac{5}{8}$ in. by $1\frac{1}{8}$ in. inside.

51. Tooth brush box $6\frac{5}{8}$ in. by $\frac{7}{8}$ in. by $\frac{5}{8}$ in. deep inside.

52. Flat cigaret case with spring hinged cover. Holds ten cigarets with a metal clip inside. $3\frac{3}{4}$ in. by $2\frac{3}{4}$ in. by $\frac{1}{2}$ in. thick.



Address all inquiries to Stock Mold Department, Modern Plastics, 425 Fourth Avenue, N. Y. C. All molders are invited to send samples from stock molds to appear on this page as space permits.

WORTH FILING

How stock molds are sometimes used

IN RECENT months several manufacturers of safety razors have taken kindly to the idea of packaging their products in plastic boxes and some clever designs have resulted. Razor Products Corp., however, is the first one we know to make use of a stock mold from which to have these boxes produced. Nor is the box they have chosen lacking in any distinction as an individual container.

The box selected has a telescope cover which in itself is quite a departure from those of its contemporaries. To this they have added a partitioned section in the box to hold the razor firmly in place and provide space for four packs of blades. Their identification is molded on the upper edge of this partition where it may be easily seen each time the box is opened. Further identification is obtained through a decalcomania on the cover which is protected from wear by a transparent coating. The manufacturer's name appears again inside the cover of the case.

This is an interesting example of the economies made possible through the use of stock molds which have been pictured in the last three issues of MODERN PLASTICS. If you will look at number 47 on the opposite page you will see the Razor Products Corp. box in its original form. Thousands of these have been produced and used for toilet accessories in traveling cases yet with its new partition and trade-marked

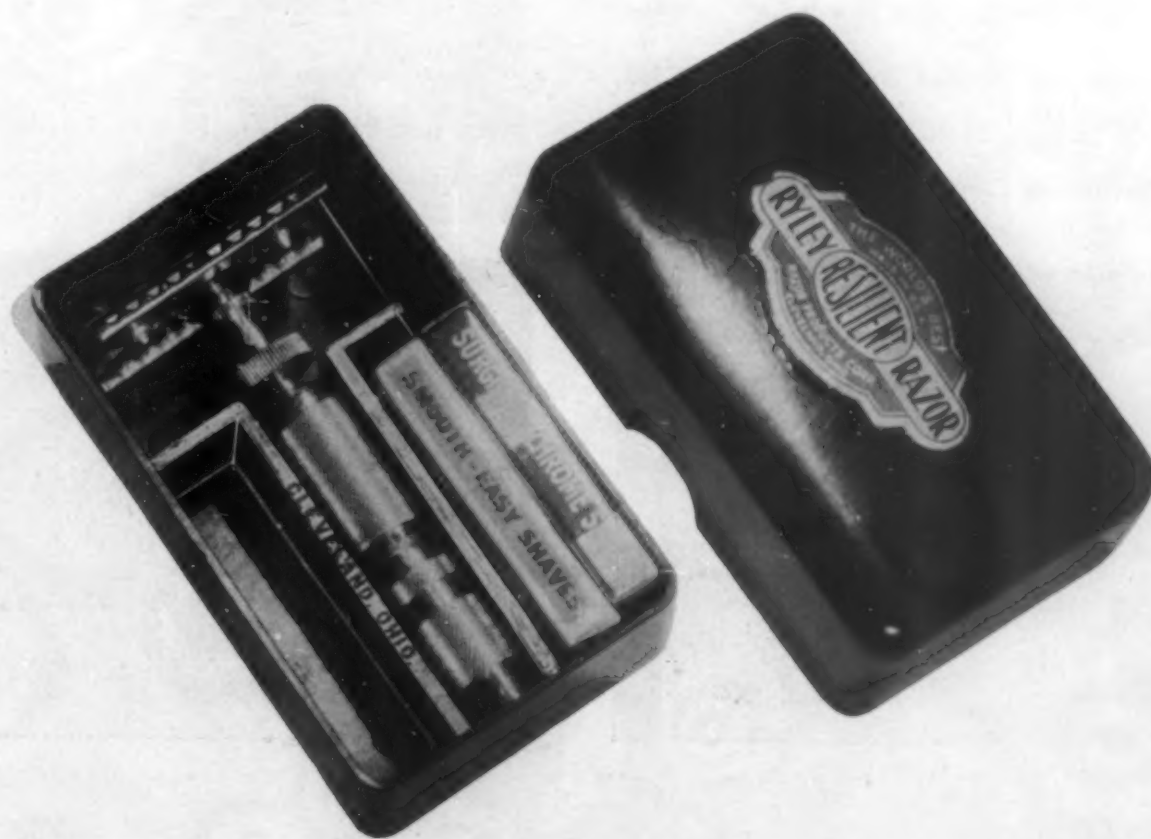
cover it becomes a new box for a new purpose without going to the expense of a specially designed mold.

Being plastics, the box is unaffected by water or soap. It cannot be chipped or dented and is not easily broken. It makes a neat traveling companion as well as being of good proportions to fit into a medicine cabinet without taking too much space.

The new razor is rather a radical departure from conventional types of safety shaving equipment. It is reported to glide over the ridges and bumps adjusting itself to the varying surface but shaving all the time. A ball and socket swivel joint does the trick and the blades are easily adjusted to difficult beards.

Aside from packaging opportunities, there are stock molds available for thousands of items that are more or less staple in their design and use. These are being assembled as rapidly as possible and will be pictured here from month to month so that manufacturers will be kept informed as new ones become available.

Stock molds, of course, will not meet the requirements of those who want special designs for their exclusive use. Nor is it to be understood that there are stock molds for every type of plastic molding. The purpose of this stock mold presentation is simply to make it possible for those who would like to use plastics, for items that will not stand initial mold costs, to do so. Many are using the service to advantage.



PACKARD DIALS:

Packard is using Plaskon for all instrument panel dials. Translucence in combination with its handsome, smooth appearance has made Plaskon the standard material for this plastic application on one of America's finest motorcars. It lets light through (from concealed lamp)—but shuts off all glare from the driver. Yet at all times, readings are clearly visible. The dials do not discolor with age as the ivory color is part and parcel of the piece . . . not an applied finish. And because they are Plaskon, they do not chip, or check with temperature variations. Could you use plastics in any similar way? Plaskon has much to offer you. (Incidentally, that horn-button is mouse grey Plaskon).

The dials are molded by Reynolds Molded Plastics, in Jackson, Mich., and the hornbutton by American Record Corporation, Scranton, Pa.



GE CONTROL KNOB:

The control knob below belongs on General Electric refrigerators where, by turning it, the temperature inside is regulated. Actually, it's much smaller than shown. We've blown it up to bring out the neat detail and its smooth surfaces . . . and to bring home Plaskon's uniform strength and color on the smallest pieces. Plaskon threads easily and is molded in varying thickness. Molded Color minimizes the number of rejects. The housewife, on the other hand, likes the GE knob for its pleasant, warm feel and permanent, pale-blue color (for easy identification).

Molded by Plastics Department of General Electric, in Pittsfield, Massachusetts.

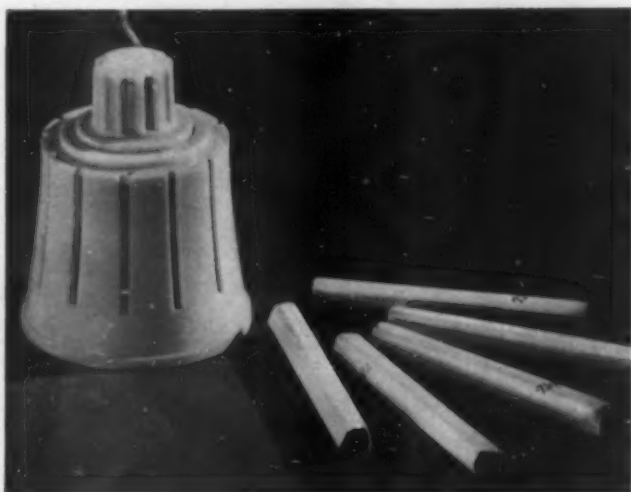
Please address all inquiries to Plaskon Company, Inc., 2121 Sylvan Avenue, Toledo, Ohio.

Become a free subscriber to Plaskon Parade!



GLO-TIP LIGHTER:

The electric Glo-Tip provides one of life's little comforts—a quick, clean, handy light where and when needed. Its permanent utility for boudoir and board room has eliminated lots of match fumbling. The new lighter is molded in several colors, selected from the unrivalled Plaskon range. It is dielectrically strong and able to withstand the turbulent career that lighters must expect. Notable is the fact that two molding operations produce the lighter complete and ready for wiring.



We almost forgot to say that this is probably the most successful electric lighter on the market, and the logical companion for countless Plaskon cigarette boxes.

The Glo-Tip is molded by Plastic Molding Corporation in Cincinnati, Ohio, for Cooley Electric Furnace Company of Indianapolis.



FLASH-O-LENS:

Packard uses Plaskon for translucence, but Flash-O-Lens uses it for light reflection. Different pigmentation giving the desired quality explains this apparent paradox. With Molded Color all the light from the interior lamp in the Flash-O-Lens Magnifier is utilized. The smooth, white semi-opaque walls see to that—by reflecting light that would otherwise be lost by diffusion and absorption. This light reflection value of Plaskon is solving all kinds of illumination problems. Your product may need its other advantages too . . . sales appeal . . . steadfast color beauty . . . durable strength. Plastics people use it for all these reasons. We'd like to submit what it can do for you.

Molded by Boonton Molding Company in Boonton, N. J.

Please address all inquiries to Plaskon Company, Inc., 2121 Sylvan Avenue, Toledo, Ohio.



developments of the month

1. A new departure in flashlight cell construction is the use of a molded plastic disc to seal the top of the cell, instead of the former method of filling the top cavity with sealing compound. Being inert to battery acids the molded plastic top cannot corrode

2. The King Pin Test-A-Brak records the condition of automobile brakes and indicates whether they are in a safe, doubtful, or dangerous condition. It records the distance required to stop a car at 20, 30 and 40 miles per hour, and it is contained in a Bakelite case. Manufactured by the Allibestos Corp.

3. Here is a Bakelite molded container for typewriter ribbons with a close fitting cover that insures clean, fresh, ribbons for the buyer. It has after use value as well, for clips, pins, rubber bands and trinkets and affords easy identification of colors

Robeson-Rochester Corp. The plastic fluted handles are molded of Durez and the top handle acts as a foot when the top section folds back

7. Thermo-roller is an electric heating device made by the Electric Roller Corp. for reducing fatty tissues. Made of corrugated rubber with an internal scientific platinum pointed thermostat which prevents overheating. The ends are green and white striated Bakelite cast resinoid

8. This tobacco jar 5½ inches high and ash tray 7 inches in diameter indicate the scope of molding possibilities in the popular price class. They are molded by Bryant Electric Co. of mottled green phenolic and were purchased in the five and ten cent store at twenty cents each

9. Proctor & Schwartz Inc. has built a toaster that does everything; turns out perfect toast as you like it, keeps it warm and fresh, and almost best of all has a molded base and control knobs which never get hot enough to burn your fingers or the tablecloth

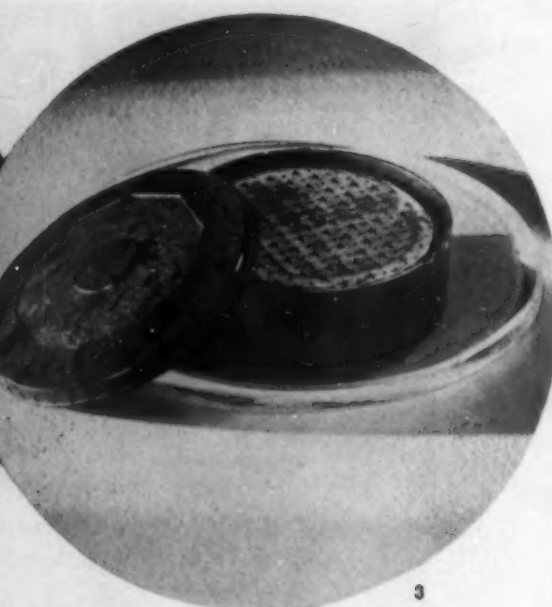
10. Arm rests of molded Durez on this sun room and terrace chair assure a lasting luster unaffected by sun or rain. The use of synthetic materials lengthens the life of service such furniture



1



2



3

4. The Ediphone Division of Thomas A. Edison Inc. is introducing the new Pro-technic Ediphone which boasts of twelve exclusive features. The dictating mouthpiece is made of Bakelite providing sturdiness and light weight and which is easily cleaned. The receiver is scientifically designed for natural recording of the voice

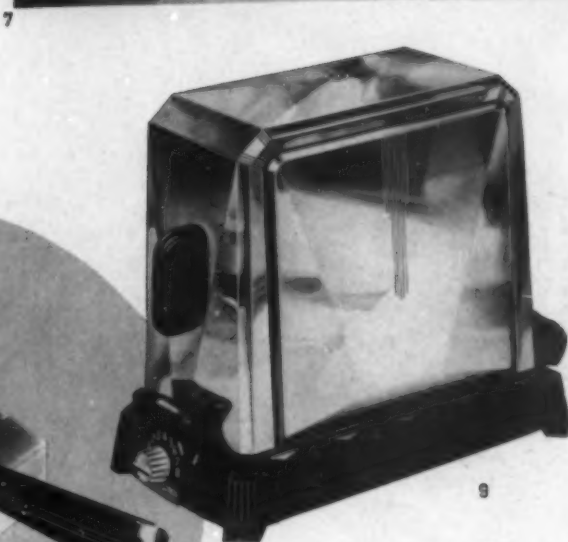
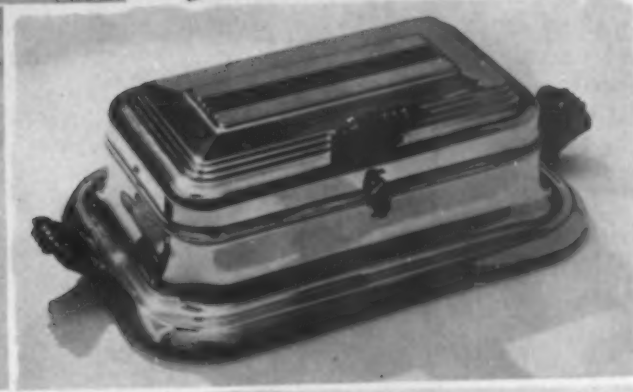
5. Plastic Fabricators turned out this neat clock of Catalin. The drum is black with hour holes drilled into the face and wiped with white. For decorative contrast the skill and block are mottled green cast resin, resting on a base of black

6. A versatile miniature electric range which makes toast, broils steaks, toasts sandwiches, or fries eggs, has been announced by

can give because they do not rust, chip, crack or peel. Bright colored waterproof fabrics replace the old leather-covered cushions

11. A new molded plastic range cap has been developed by Arrow-Hart & Hegeman Electric Co. for simpler and safer installation of electric ranges. Molded internal plate and housing of heat resisting Durez make the caps shock-proof and they lose neither their dielectric strength nor luster through exposure to high temperatures

12. Magazine Repeating Razor Co. introduces a new razor with all the attractions of its expensive model at less than half its price. A Marblette handle with blade magazine as a separate unit did the trick. It comes to you in a plastic box, too



Choosing the right molding material

BY C. W. BLOUNT

STEEL, like many other raw materials, is bought by specification. When an engineer desires to make a part of steel, he knows there are many types of steels and he chooses the one best suited for his needs, after he has consulted published specifications. If the use involves properties which are not evaluated in the specifications, he consults a known authority on steels.

It is just as important that the engineer or purchasing agent select the right molding material for every piece he intends to produce in molded plastics.

available in molded phenolic materials and has taken one of the first steps towards classifying these materials according to finished properties by specification.

United States Navy specification 17P4 is not considered complete by the Bureau of Engineering, and many changes and additions will be made as the Navy's needs become better known. This specification recognizes seven distinct types, and it is safe to predict that the list will eventually be amplified into a hundred or more. As a matter of interest, the following table is given to show the classes now specified

Fig. 1



Fig. 1. Magneto part made from cellulose filled material, having best electrical properties

Fig. 2

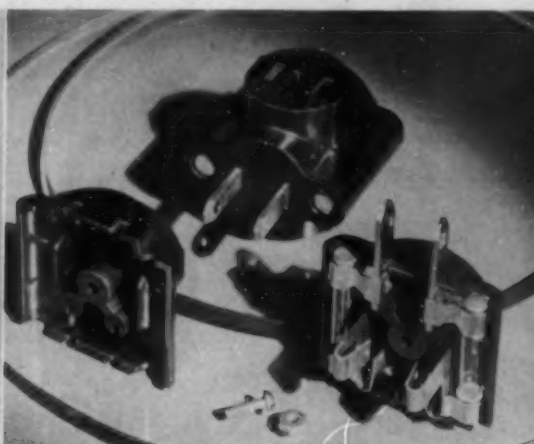


Fig. 2. Attachment plug made with general purpose molding material

Fig. 3



Fig. 3. Shoe guide and back pressure valve for oil well drilling equipment made with high-impact molding material

To specify a molding material by a trade name is not enough assurance that the correct type of material sold under that trade name will be employed for the particular piece being molded. Manufacturers of plastic materials have developed hundreds of molding materials, each designed to have specific properties and characteristics.

Up to the present time the plastic industry has not been sufficiently standardized to classify all its products by issuing specifications for various classes. Information is available, but the materials are being improved constantly in one characteristic or another, and data is, therefore, likely to be obsolete before it is printed. Phenolic molding material is a complex organic chemical preparation. There are many types of phenolic molding materials with a wider variation in some of their properties than one finds in the different types of steels.

Industry should take advantage of the fact that one molding material will serve better than another for a given purpose. By law, the United States Navy is obliged to write specifications on items it purchases and then must buy on a strictly competitive basis. The Navy has recognized the wide range of properties

by the Navy with the corresponding phenolic materials that meet the requirements:

Type	Description	Bakelite Material
CFE Cellulose Filled	Best Electrical Properties	XM1000 (See Fig. 1)
CFG " "	General Purpose	BM120 (See Fig. 2)
CFI " "	High Impact Strength	XM3510 (See Fig. 3)
MFE Mineral	Best Electrical Properties	XM262 (See Fig. 4)
MFG " "	General Purpose	BM250 (See Fig. 5)
MFH " "	Best Heat Resistance	BM261 (See Fig. 6)
MFM " "	Best Water Resistance	XM53 (See Fig. 7)

The illustrations show parts produced of each of the different classes of materials, but space does not permit going into the details of the specifications at this time.

With the many types of phenolic materials available to the buyer, how does he obtain the proper material and know that it is fabricated properly? There is no published data by an unbiased association. The best advice is to choose a material supplier and a molder just as one would choose a doctor to take care of an ailment. One must have confidence in his doctor, and so he must have confidence in the

molder and material supplier. A consultation between molder and material supplier is often necessary as the parts must be fabricated properly and as economically as possible. Sufficient information must be given to permit them to prescribe properly. This seems easy, but very often manufacturers are so familiar with the functions of their products that important details may be overlooked. The

Fig. 4



following questionnaire in outline form has been prepared to serve as a guide in giving complete information. There may be questions which have no particular relation to every product; if so, these can be overlooked. If this information is always supplied, even those using plastics for the first time will be assured of securing the best material for every piece to be molded.

Conditions of use

Note: In every instance the temperature and relative humidity under which the molded part will operate must be known.

General

1. What is the product? Submit blue prints or sketches.
2. Are there other parts with which it functions in an assembly? Describe assembly, particularly clearances and method of assembly. Submit sketches of assembly.
3. What material has been used most satisfactorily in the past? What improvements or advantages would you like to gain in using molded plastics?
4. What essentials of design and dimensions cannot be changed? What variations are permissible if it is found that they will facilitate economical production?
5. What colors are desired? Is it necessary that the color remain unaffected by the sun or ultraviolet light?

(Continued on page 54)

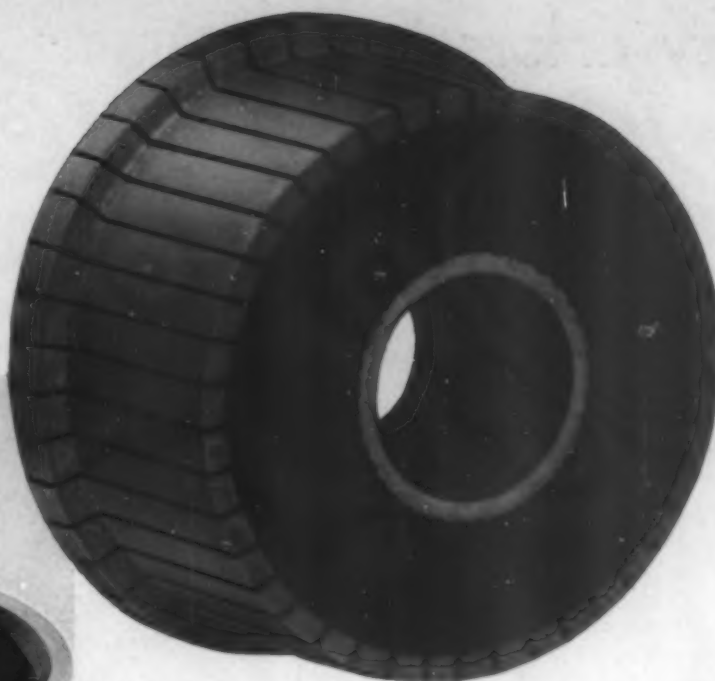


Fig. 5

Fig. 4. Coil forms made with special low power factor molding material

Fig. 5. Commutator made with mineral-filled general purpose molding material

Fig. 6. Heater plug made with heat-resistant molding material

Fig. 7. Water meter disc made with special water-resistant molding material

Fig. 6

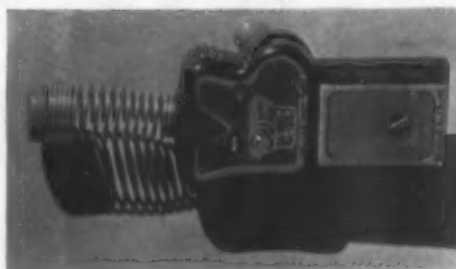


Fig. 7



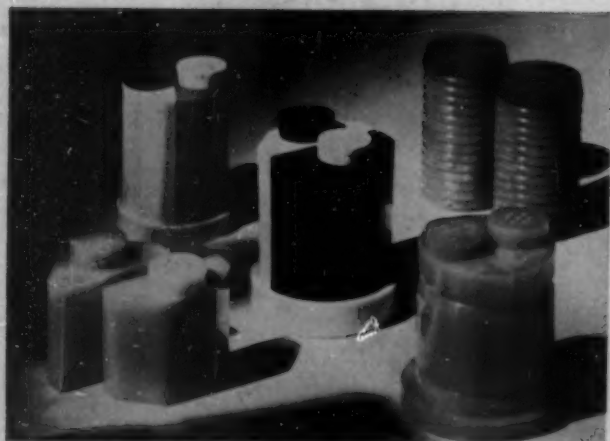
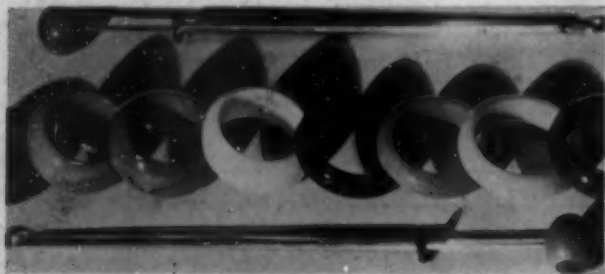
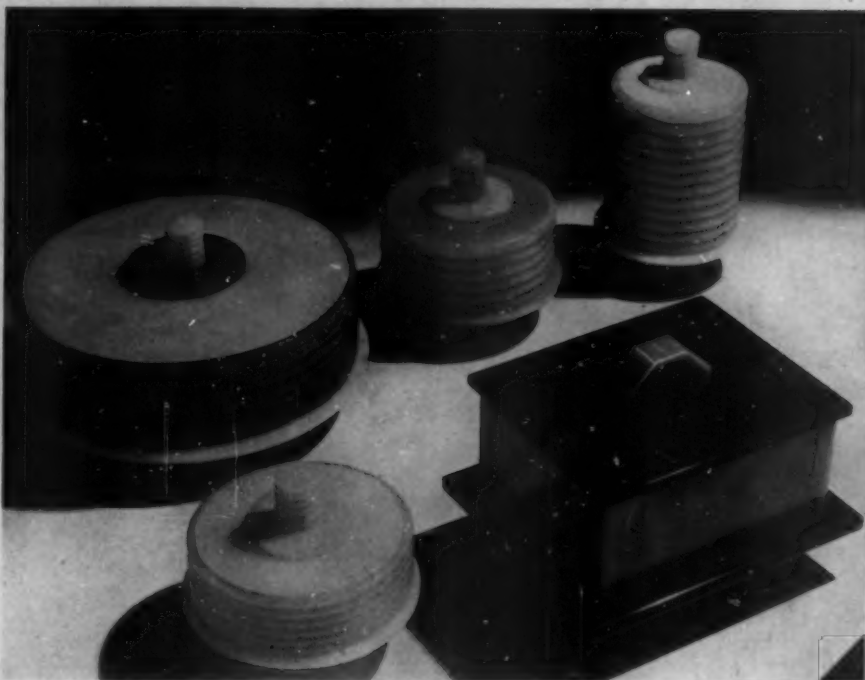
Gay colors for premiums and gifts

BY JEAN MAYER

SINCE there is no longer a need to worry as much about business and budgets, women (and men, too) are giving more thought to the little niceties of hospitality and home entertaining. New accessories and decorative diversities are popping up even in modest homes and manufacturers with a flair for catering to these inexpensive whimsies have orders aplenty.

Manufacturers being aware of this trend of fashion are bringing out smart lines of decorative novelties for dining room, powder room and boudoir—where guests are more likely to see them first. These are the vulnerable spots of which the hostess is most conscious and where she will go to any length to make the proper impression.

Half the fun of a cocktail or dinner party, as anyone knows, is the informality and gaiety it inspires. And happy is the hostess or host whose



These photos show how attractively sheets, rods and tubes of cast resins may be machined into gifts and premiums of smart lines and gay colors. Top: A gathering of powder boxes and cigaret containers for boudoir or powder room. Center: Napkin rings and olive tongs. Bottom: Individual pepper and salts of odd interesting design

thoughtful attentions to intimate details bring forth exclamations of delight and complimentary comment from friends gathered around.

That is the reason why cast resins with their naturally gay and sparkling colors lend atmosphere to such occasions. They are easily fabricated and because they can be almost limitless in design, lend themselves readily to novelty and premium applications.

The Quality Turning Co., for instance, has devised the novelties you see pictured here. If you have ever struggled to get the first (or last) olive out of a bottle without at the same time getting a salt bath, you will appreciate instantly these novel tongs. They are long enough to reach the bottom of the tallest bottle and a slight pressure on the decorative knob at the top opens the tongs to grasp an olive where a spring holds it in place until it is dropped into a cocktail glass or on a tray without splash or fuss.

The knob at the top is a simulated stuffed olive made of green cast resin inlaid with a spot of red to appear as pimento. There is another with a cast resin Maraschino as a knob for those who prefer Manhattans.

For table decoration, there are cast resin candlesticks of modern lines in a variety of colors to please the most choosy. Pepper and salts galore—different sizes and shapes as well as a wide range of color combinations. These shakers are unique little pieces, substantial as well as smart. They are light in weight, practically unbreakable and are not easily tipped over. Some are ribbed, some are short and fat, while others are thin—decorated along straight sleek lines, but all having different turnings that distinguish their design.

Then, there are chubby little napkin rings to go with them, machined from (Continued on page 61)



METAL-CORED TENITE

ENCASING metal die-castings in smooth, colorful Tenite marks a new and important development in product design. Examples are these motor car handles, by Die Casters Pty., Ltd. of Australia, in which Tenite is molded over zinc cores by the rapid injection process. The use of Tenite over metal enables designers to achieve new beauty and utility in many products where high strength, lustrous coloring, warmth, and smoothness are desired. Write today for the Tenite booklet.

TENNESSEE EASTMAN CORPORATION (*Subsidiary of Eastman Kodak Co.*), **KINGSPORT, TENNESSEE**

New deal with plastics

BY H. S. SPENCER

Manufacturers of office equipment will be interested in the solid strength of the one-piece molded housing which supports the intricate mechanism of this machine

HAVE you ever played an evening of bridge and received nothing but three and four card suits? Have you ever seen the good hands go to your opponent time after time? Have you ever noticed hands repeating themselves even after regular shuffling and dealing which should have eliminated this possibility?

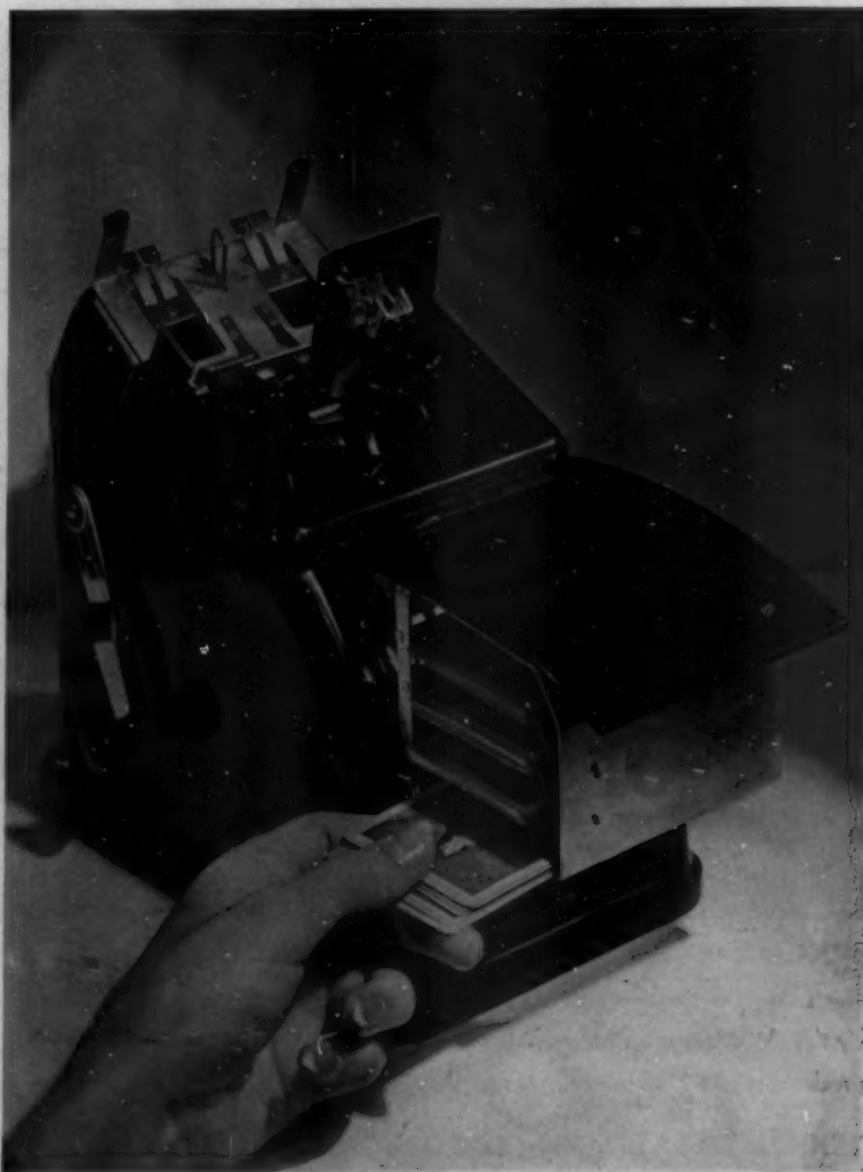
If you have—and who hasn't?—we submit to you the I-Deal Automatic card shuffler and dealer—a molded plastic device that assures a true random shuffle every time. Ingeniously worked out mathematically, the I-Deal has a system of cams which breaks up the sequences of the previous hands and in six seconds delivers four hands which are mathematically mixed-up and far more interesting to play. The memory expert who could remember combinations which were not broken up by imperfect hand shuffles thus loses his previous advantage.

So much for the function; now note the construction, based on the structural use of molded plastics. One molding, made of black phenolic material, forms the entire housing of the device and supports the intricate mechanism inside through the use of a base plate fitting into the open bottom of the molding. The top-hinged front cover which springs up with the four shuffled hands when the top lever is pulled, is also molded of black phenolic. This cover is a rather thin molded plate curved to follow the contours of the case, and supporting a stamped metal tray assembly on which the shuffled hands are delivered. Five years ago engineers would have scoffed at construction like this. Now they recommend and approve it.

Of particular interest to manufacturers of office equipment are the size and shape of the I-Deal Shuffler. Standing considerably higher than the average adding machine, the shuffler is of somewhat the same shape, and demonstrates the solidity and rigidity of all-molded construction on large pieces, despite hard usage. Furthermore it dispenses with the usual diecast bot-

tom frame, ordinarily thought necessary for strength. Although full advantage has not been taken of the material's decorative and sculptural possibilities, it does demonstrate how strength, light weight, permanently lustrous, wear-proof finish, and intricate sections, curves and cutouts can be economically combined in a one-piece, one-operation molding.

The I-Deal Corporation in determining material chose plastics mainly because of their greater attractiveness and because they are never cold to the hands as metal would be.





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MOLDING COMPOUNDS



NEW IDEAS

- Molded synthetic resin bearings, to replace wood and metal bearings, have a promising future but cannot be indiscriminately introduced in competition with the older materials. Each bearing problem is individual, and a number of applications are already known in which molded bearings are superior in performance and economy to bronze or wood. Certain definite advantages have been observed, for example, where there is severe exposure to dust. Again, in operations at low loads and speeds, where lubrication is apt to be inadequate, the molded bearings are also in a favorable competitive position. Heat, on the other hand, is a serious problem; because of low thermal conductivity the synthetic resin bearing has a greater tendency to run hot, and less heat resistance, than a bronze bearing. Hence in choosing the material for bearings for a given use all factors of load, operating speeds, lubrication, accessibility to cooling, etc., must be duly considered. (W. Ostermann, *Zeitschrift des Vereines Deutscher Ingenieure*, Sept. 21, pp. 1131-6.)
- It is now compulsory in Holland for cyclists to wear a white stripe across the rear mudguard of their bicycles at a height of about a foot from the ground. Celluloid strips which fit readily over the edges of the mudguard are being sold for the purpose, and will be standard equipment on bicycles manufactured after the law became effective. Usually the white strip is sold with an attached reflector, to increase visibility in the light of approaching cars; but it is said that the white strip becomes visible before the reflector for other cyclists approaching at night. (R. H., *Kunststoffe*, December, p. 319.)
- A highly porous material which is suitable for sound insulation or for heat insulation is made by blowing fine gas bubbles through a liquid synthetic resin composition, especially a phenol-aldehyde resin. As an alternative method, the liquid may be beaten to a froth and then hardened. In either case, when the material is molded a waterproof surface skin is formed, so that there is no loss in efficiency of the innumerable tiny gas cells in service. Because of this waterproof surface skin the material is also suitable for making unsinkable boats. (Camille L. E. Burel, French Patent 765,547.)
- Window shades which serve as color filters, for protecting light-sensitive goods in show windows without sacrificing visibility, are now being made of cellulose acetate which is tinted according to the kind of light to be filtered out. These shades are sold under the name "Solostopp". For preventing fading of silks and other dyed goods in show windows, "Solostopp" is supplied in an orange color which filters out blue, violet and ultraviolet rays which accelerate fading in direct sunlight. For protecting food products (meat, dairy products, etc.), which are sensitive chiefly to ultraviolet light, blue "Solostopp" is preferred. (H. W., *Kunststoffe*, December, p. 319.)
- The repeating match, i.e., a match which can be extinguished and relighted repeatedly, is an idea which has attracted more than one inventor. The largest German chemical syndicate has patented a repeating match which is made of cellulose esters suitably blended with other materials used in match compositions. Of course the flammable component is nitrocellulose; but the delicate balance between lighting and burning properties and the capacity for being extinguished and lighted again requires exactly the right degree of flammability, neither too easy nor too difficult. The nitrocellulose is therefore blended with cellulose acetate (which is much less flammable) in proportions which give the desired effect. (Italian Patent 278,965, I. G. Farbenindustrie Aktiengesellschaft.)
- A cheap plastic material for molded electrical insulation and for other inexpensive molded articles is made by condensing powdered lignite with an organic base such as aniline, pyridine or triethanolamine, in presence of a fibrous filler and a small amount of a softener, which may be rubber. Switchboard plates, switch parts, handles and other articles can be successfully made from the new material. (Studien- und Verwertungs-G. m. b. H. German Patent 618,231.)
- A new discovery which effects synthetic resin condensations without the aid of catalysts overcomes one of the fundamental objections to some of the commonest plastic materials. The objection has been that the molded resins undergo changes in color or other physical properties because residual catalyst promotes further resinification after the finished article has been manufactured. In the new process no catalyst is added to the reaction mixture for making the resin, and no heat is applied, but the mixture is exposed to the action of a high tension, high frequency alternating electric current. The voltage must be at least 15,000 and the frequency at least 1,000,000 cycles per second. The condensation reaction proceeds smoothly and efficiently, yielding a resin which retains its color and other properties without change after molding. (Jean de Granville and Leopold Davion, French Patent 788,407.)
- Grinding tools are made in suitable shapes for various purposes by mixing diamond dust or silicon carbide, or both, with a phenol-aldehyde resin and molding to the desired shape, either alone or on a metal support. (P. Vogeli-Braggi, Diamant-Schleiferei Vogeli und Wirtz Aktiengesellschaft, British Patent 434,402.)
- Tubular grips for the handlebars of bicycles or motorcycles, or for other kinds of handles and the like, are made by covering one end of a cardboard lining tube with a cardboard disk, and molding around this liner a plastic material, such as a synthetic resin molding composition, so that a tubular shape with one end closed is formed in the mold. Two dies are used for molding; the upper one has a recess, and the lower one a projecting peg of smaller diameter than the recess, to define a tubular space for the molded article. The peg is hollow, to admit an ejector rod which removes the handle grip from the mold. (F. W. Bluemel, Bluemel Bros., Ltd., British Patent 443,084.)
- "Lignofol" is a new type of indurated wood which cannot be split and, though quite hard, can be turned, drilled and worked in other ways by use of the usual tools. It is stronger than wood, and much superior in elastic properties; its specific gravity is about 1.4, and its moisture absorption only one tenth to one fifth as great as that of ordinary wood. It has numerous uses in the textile industry, e. g. for spools and machine parts, silent gears, etc. It is also useful for rollers, handles, bearings and the like; and in aircraft construction it combines relatively light weight with great strength and freedom from fatigue. It is made by impregnating wood veneer with a synthetic resin and laminating under heat and pressure sufficient to harden the resin. The maker of "Lignofol" is Venditor G. m. b. H., Troisdorf, Germany. (*Plastische Massen*, December, p. 380; *Zeitschrift des Vereines Deutscher Ingenieure*, 1935, p. 676.)



Lamp shade material exhibited

One of the outstanding achievements in the plastic field during the year 1935 was the development of cellulose acetate plastic material for use in the manufacture of lamp shades. This product is manufactured by the Fiberloid Corporation and is sold under the copyrighted trade name of Fibestos.

This new lamp shade material is the result of a number of years of exhaustive research work. Its characteristics are truly amazing. It is furnished in all the colors of the spectrum and possesses a beauty formerly available only in materials of much greater cost. Among the colors are ivory, onyx, jade, pearl,

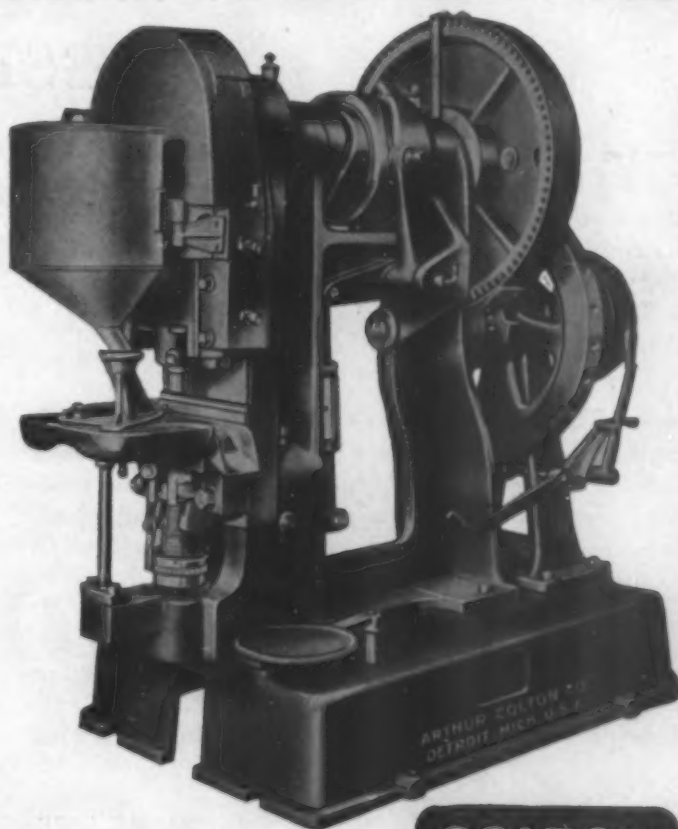
marble and mottled effects, as well as the most delicate of pastel shades so much used today in decorating.

Fibestos is durable, washable, heat-resistant, and has been approved by the Underwriters' Laboratory. It can be pleated, cemented, stitched and formed and, for lamp bases, may be machined or molded. It is supplied in sheets 20 in. wide by 50 in. long in any thickness desired. It is also produced in rods and tubes of various diameters and wall thicknesses. It is light in weight, strong and resilient. The new beauty of lamp shades made possible by Fibestos adds new charm to the home.

COLTON Preforming Machines have won wide usage because of their inherent sturdiness, their uniform, speedy and satisfactory performance.

Note the new, improved 5½ Tablet Machine shown at right. The solid steel frame insures perfect operation; the improved die fasteners, improved cam construction, heavier ejecting arm brackets and vanadium steel plunger make possible high speeds without fear of breakdown or lowered quality. In every particular, we believe, this machine is by far the finest the market has to offer.

The 5½ Tablet Machine makes tablets up to 3" in diameter and having a fill depth of 2½". Other Colton Preforming Machines—single punch, multiple and rotary—are likewise outstanding in construction and performance. Write for literature on these machines or have our engineers visit your plant—



ARTHUR COLTON CO.
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COLTON
DETROIT

Among our contributors this month

DAVID S. KUSANOBU, who wrote the article "Plastics in Japan" on page 20 is a member of the Takamine



Corp., the American representative of Japan Bakelite Co., Ltd., of Tokio, which is an affiliate company of the Bakelite Corp. Mr. Kusanobu is liaison-man between the two organizations. Later this year, he will go to Japan to assist in a reorganization program of the Japan plant which includes

doubling its manufacturing facilities. Right now he is undertaking a course of intensive training at the American plant under the tutelage of Bakelite engineers.

BLAINE STUBBLEFIELD who wrote the interesting story of "Plastics in aviation" on page 17 has been appointed manager of the Newspaper Service Bureau of McGraw Hill Publ. Co.

Mr. Stubblefield was formerly publicity manager of Boeing Air Transport, later account executive with Doremus & Co., has been associated with the product design profession, and for years has contributed to various business and industrial publications. During the war, he was commissioned in the U. S. Air Service.

R. ROCHESTER knows his "Molded Threads". That's why we asked him to write the article by that title which appears on page 25. Mr. Rochester graduated from M. I. T. in 1909. He has devoted his life to Engineering—ten years in Europe—then in charge of U. S. Army Airplane plant during the war—and now with Tech-Art Plastics Co. of which he is vice-president and general manager.

C. W. BLOUNT who wrote "Choosing the right molding material" appearing on page 34 started out to be an admiral, graduating from U. S. Naval Academy in 1922. He was commissioned but not as an admiral so resigned immediately to go with the Radio Corp. of America. In 1924 he went with Bakelite Corp. as sales engineer and is now assistant sales manager of that company. He knows his plastics and how to use them, but he would like to suggest the use of Bakelite for everything.

EVE MAIN, who wrote the "Plastic Modes" feature beginning on page 13 this issue, gained her early writing experience with a Massachusetts advertising agency. Some years ago she came to New York with L. C. Chase & Co., and later became associated with Lurelle Guild, industrial designer. Since June last year, Miss Main has been writing as a free-lance, a number of her stories appearing in this magazine.

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➡ **HYDRO - PNEUMATIC ACCUMULATOR**—For Sale—One Watson-Stillman Accumulator, high and low pressure, complete with air compressor, air receiver, motor driven high pressure horiz. and low pressure vertical Pumps; also Hydraulic Presses, 27" x 46" and 12" x 12" platens. Reply Box 134 Modern Plastics.

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➡ **WANTED — PREFORM MACHINES**—Will pay cash for idle or surplus preform Presses—also Hydraulic Presses, Pebble Mills, Mixers, Sifters, etc. Send us your list. Consolidated Products Co., Inc., 13-14 Park Row, New York City.

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➡ **SALESMAN**—Cast Resins. State age, experience, salary. Reply Box 145 Modern Plastics.

➡ **BUSINESS OPPORTUNITY**—U. S. Patent #1983756, covering self-locking bicycle handle bar grip of plastic material, is being offered for licensing. Article is fully developed, hundreds of thousands are in use abroad. Samples available. No down payment. Big opportunity for molding or merchandising concern with outlet to manufacturers, dealers, chain stores, etc. Reply to F. Loewenberg, 10 East 40th Street, New York City.

➡ **HUBBING WORK**—Opportunity for you to do business with old established firm if you are in position to do hubbing work on molds for plastic parts. State tonnage of your hubbing presses, also whether or not you can make necessary hubs. Reply Box 147 Modern Plastics.

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Will the gentleman who failed to use the subscription card that appeared in the last issue of MODERN PLASTICS, please consider how he would miss this magazine if it didn't arrive next month. This is a form of Information Insurance on Plastics that costs only \$5.00 a year and thousands have found it pays. Use the attached order card now!

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Will the firm that failed to advertise in MODERN PLASTICS last year permit us to present a few new facts—about subscribers and their buying habits—which may lead to further consideration of the matter? This is a Business Opportunity of rare value, and now is the time to cash in.

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COOK, experienced, Scotch \$50; Finnish, \$55; recommended. Anderson Agency, 822 Lexington av.

COOK, chambermaid-waitress: English; excellent references: \$80 together; city. SUsquehanna-7-7713.

COUPLE, young Swedish, expert cook, butler-valet-chaufeur; seven years' references: \$100. 822 Lexington av. RH-4-2225.

COUPLE, Finnish, excellent cook-housekeeper, chaufeur-houseman, \$80; well recommended. UNITED AGENCY, 165 E. 72. BUTterfield-8-3052.

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COUPLE, exceptional cook, butler, wait-charge except laundry; no driving; wages \$125; best references. RH-4-6808, ext. 28.

COUPLE, Viennese, cook-maid, butler, valet, drives; excellent references. RHineclander-4-1179.

COUPLE, butler, cook; experienced; Finnish; references: \$100 up. REgent-4-5001, extension 806.

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Keeping posted

Plaskon moves

Plaskon Co. Inc. (formerly Toledo Synthetic Products, Inc.) is now established in its new offices at 41 East 42nd St., New York City. S. W. H. Jones, New York representative of the company, is master of ceremonies.

Atwater with Gorham

Kenneth N. Atwater, who has been with the Beetleware division of the American Cyanamid Corp. for the past seven years, has left that organization and joined forces with the Gorham Company in Providence, R. I. in promoting its recently announced beryllium-copper cast molds.

Austin with Stokes in Chicago

The appointment of Clyde E. Austin, Room 447, Monadnock Building, Chicago, Illinois (Harrison, 8028), to handle their lines of industrial tablet compressing and preforming in the Chicago area, has been announced by the F. J. Stokes Machine Company, Philadelphia, Pa.

All-glass, windowless building

The world's first all-glass, windowless structure, the Owens-Illinois Glass Company's two-story glass block research laboratory at Toledo, was reported to be completed and ready for occupancy February 1. This new building will house the company's vast packaging research division, headed by Dr. Herbert A. Barnby, under whose direction research technicians will carry on their mission of assisting customers in their problems of production control, packaging and design. Here also centers the ceaseless search for new applications of glass in the packaging industry.

This building is a glass wonder of the world, introducing an entirely new trend in architectural design that is destined to revolutionize the building industry, according to architects and builders.

Save-Lite catalog

Prepared with the cooperation of the Better Vision Institute and Better Light-Better Sight Council, the new Sherwin-Williams Save-Lite catalog is a factual presentation of painting as a part of lighting and "plant conditioning." In a concise manner it tells what a wall and ceiling paint should be, and its importance as an aid to better and more economical production as well as for beauty and protection. Copy on request.

Barton designed Emerson radio

We have just been told about an error that occurred in an article last month in which Jan Streng was credited with the design of all three radio cabinets illustrated on page 33. As a matter of fact, the small Emerson model was designed by George F. Barton, Jr., of Edgewood, R. I., to whom we apologize.

Keeping posted

Laminated cellulose signs

The Westmoore Distributor Co., Inc. reports that it has secured a patent on a special process of laminating plastics into translucent signs for every occasion. The process, known as the Westmoore-ize Process, uses sheets of transparent plastics laminated with opaque sheets, from which letters and designs have been cut out, with the result that the finished product is smooth on both sides with no projections to catch dirt. The materials are laminated with heat and pressure into an integral sheet with no possibility of the bond being separated.

When used as a sign, the finished sheet may be placed in a metal frame with boxlike backing which is fitted with sockets and bulbs for illumination. The translucency of cellulose or urea plastics when illuminated this way gives the sign great visibility without glare. Daylight visibility is equally good. The strength of the material makes such signs practical in many fields where glass is too fragile. Illuminated automobile license plates, directional arrows on automobiles, theater marquee alphabets, and small advertising signs come quickly to mind as suitable applications for this new innovation.

Kuhn & Jacobs moves

Kuhn & Jacobs Molding and Tool Co. have moved their plant to 1200 Southard Street, Trenton, N. J. New equipment has been installed in the tool room where all their molds are built and new pumping equipment and presses have been added to the molding department. With enlarged manufacturing space and improved plant equipment and facilities, this company is in a better position to turn out quality moldings in rapid production than ever before. An invitation is extended to our readers to visit this modern plant whenever they are in Trenton.

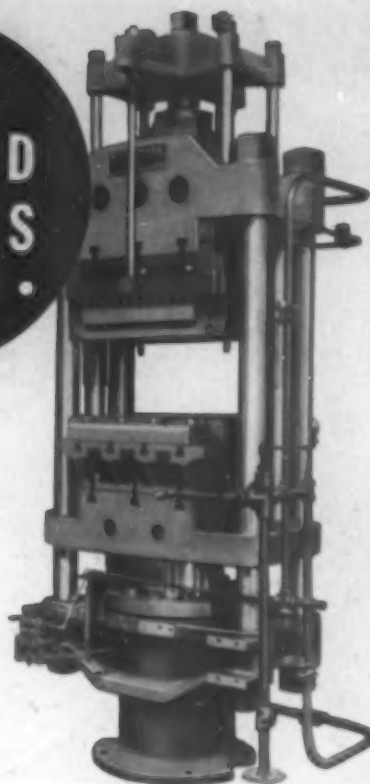
Anti-friction molding material

While standard phenolic molding compounds are fairly resistant to friction, there are applications where constant friction, plus impacts of varying degrees, requires material of greater resistance, such as cam parts, automobile door bumper shoes, builders' hardware parts, refrigerator latch bolts, machine parts in constant friction, etc. To withstand this friction, General Plastics has developed a new Durez material called 1564 which combines both impact strength and friction resistance. It contains 10% graphite, and has an impact strength approximately 40% greater than ordinary materials. Its most interesting use is the small bumper shoe which bears against the metal wedge on the new motor-car doors, supporting them and preventing rattling.

For molds that stick

A new mold often has microscopic minute projections, even though it is well polished. These projections wear off in use; and thus the longer a mold is used, the brighter the polish becomes and there is

4,500
MOLDED
PIECES
• per hour •



High production, perfect product and low cost are the outstanding features of this Southwark semi-automatic molding press.

4,500 perfect molded parts (from a phenolic compound) are made per hour. Two of these presses can be so connected as to be operated by one man, bringing production up to 9,000 pieces per hour.

Southwark is constantly studying the equipment requirements of thermoplastic molding for the purpose of offering methods and machines for cutting manufacturing costs, for increasing production rates and profits. Nearly a century of accumulated experience stands behind Southwark's engineering and production of such equipment.

Whatever your manufacturing problems—be they large or small, standard or special—consult Southwark.

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then less tendency for the newly molded pieces to stick.

In this breaking-in period, however, some form of lubrication is very helpful. A finely powdered wax is usually used, which is subject to many disadvantages. It is difficult to apply evenly, and does not reach those places where it is needed most.

The Glyco Products Co. has recently developed a specially emulsified liquid wax called "Moldslip" which is reported to have a number of advantages over the usual waxes. Being liquid, it can be applied by spraying with an ordinary atomizer or small sprayer. If it is only necessary to apply the wax to certain portions of the mold, this can be done with an ordinary camel's hair brush.

The application of a solid wax to facilitate molding in anything but the thinnest film will cause a blemish in the molded piece. Thus, this new liquid method of application assures a perfect control of as fine a film as is desired.

Golden jubilee

On January 8, the Westinghouse Electric and Mfg. Co., celebrated its fiftieth business birthday with a record gathering of Westinghouse men and women in East Pittsburgh. Since a humble beginning in a little shop in Garrison Alley, Pittsburgh, the company has grown until its activities are worldwide today. In addressing the gathering A. W. Robertson, chairman, outlined the history of the company paying handsome tribute to the courage and foresight of George Westinghouse, its founder. In pointing out some of the historic undertakings of the company he pointed out that the harnessing of the power of Niagara Falls was one of the daring and remarkable accomplishments of 1895.

This company built the first steam turbine in America and has been sponsor for innumerable electrical devices that have lightened the burden of housekeeping for several generations.

The Westinghouse organization might be said to be 37,000 man power strong. At the present time it has 2,000 engineers, and 3,600 salesmen. Its gross business in 1935 was approximately \$121,000,000.

Sorry!

Editor, MODERN PLASTICS:

Referring to your January copy of MODERN PLASTICS, we want to call your attention to page 34, item No. 3 of said issue. You give the name of the designer of three containers shown on said picture as Mr. F. C. Meacham, instead the original two (2) white containers were designed and models made by A. Janer of the A. J. & K. Co. Inc., first model made on November 1933. In view of the fact that such a statement may cause a very unpleasant feeling among plastic and cosmetic trade we believe a correction would be in order.

Yours very truly,
Andre Janer

122 Fifth Avenue
New York City

(Editor's note) And the worst of it is Mr. Janer is right. Only the oblong box in the photograph was designed by Mr. Meacham.

For home workshops

"A history of America's home workshops would begin with the crude, hand carved pieces of furniture and other articles of necessity which the early settlers fashioned with their simple implements to make the hardships of their pioneering days a little more bearable," states the leading article in the January issue of *Bakelite Review*. "Today the wheels of industry turn out machine-made products to take care of every need and want. But the home workshop still exists, and, pray, always will."

The article points out that the handicraftsman is no longer limited in his choice of raw materials. There are many new types of metals, fancy veneers, and plastic materials at his command. There are not only beautiful colored cast resinoids, but also sheets of Bakelite laminated in a variety of colors with permanent finishes that open new avenues for the home workshop owner to express his ideas in three dimensional objects. Copies of *Bakelite Review* for January are available upon request.

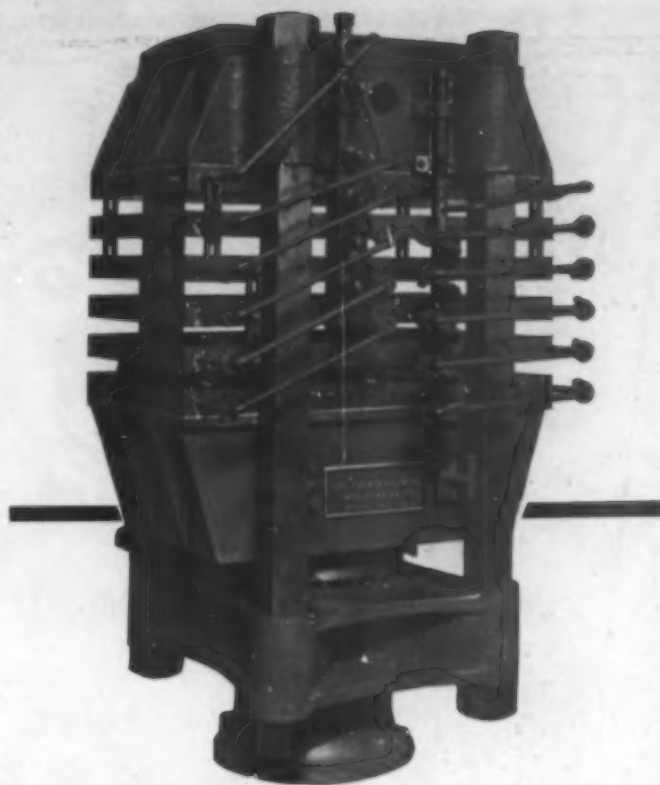
Current Input Controller

The Automatic Temperature Control Co. is introducing a new Current Input Controller for application to furnaces, ovens, platens and other electrically heated units. Over a period of years, the controller was subjected to practical tests and applications with the result that the method of regulating current inflow has been verified and mechanical design has been well proved. Four standard models have been produced to meet various requirements and finer regulation is offered in combination with existing automatic control. Bulletin on request.

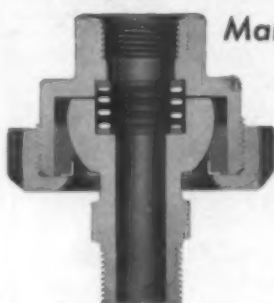
Color analyzer removes "guess-work"

White is simply white to many people, but to a new instrument displayed at the convention of the American Association for the Advancement of Science, which opened December 30 in St. Louis, Mo., white is a mixture of all colors—with the result that the instrument recognizes, and labels, a myriad of whites. Ink, dye, paint, textile, paper, and other manufacturers, as well as research laboratories, have of course long recognized the existence of the multitude of shades and differences in colors, and color specification is an important part of production control. There are blue-whites and yellow-whites, with each having many varieties of its own. Black is not always black; there are blue-blacks, brown-blacks, and red-blacks. Similarly, each color has a multitude of variations.

The new instrument, known as the recording photo-electric spectrophotometer and shown by the General Electric Company, makes it easy to obtain, quickly and accurately, an analysis of the color of a wide variety of materials, either as reflected or transmitted by the sample. The material to be examined is placed in the instrument, operation is started, and in less than three minutes the operator removes a chart which shows exactly how much of each wave length of light is reflected or transmitted by the sample. Comparisons of charts from different samples show in what respects



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73-75 WATER STREET
LEOMINSTER MASS.

their colors differ—whether one might have, for instance, more yellow than another. With the charts available, it is possible to make the necessary color corrections.

The instrument consists essentially of a monochromator, photoelectric photometer, and means of recording their respective indications. The monochromator is of the double-dispersion prism type, which insures a high degree of spectral purity. It is equipped with bilateral slits which are adjusted automatically for a 10-millimicron band. The wavelength range is from 400 to 700 millimicrons.



The spectrophotometer as shown at St. Louis, with J. L. Michaelson adjusting sample against the integrating sphere. The record drum is shown at the other end of the "U" tube

The photometer combines the polarization method of photometry with a photoelectric balancing scheme in such a manner as to eliminate from the measurements the factors of light source, phototube characteristics, and amplifier sensitivity. Reflectance values are expressed in per cent of the standard selected by the operator. Transmission values are expressed either directly in per cent or in terms of a standard transmission sample.

The recorder is of the drum type, in which the wavelength value is related to the drum position, and the photometric value is indicated by the pen position. Means are also provided for plotting special functions of reflectance, such as density, and logarithmic or multiplying factors.

The design is such that the recording and other automatic features may be omitted for special purposes. Thus it is possible to use the instrument as a manual, automatic balance, or recording spectrophotometer.

In operation, light from an incandescent lamp is passed through a hollow-U-tube, through a series of slits, prisms and mirrors. At the other end of the tube is a hollow sphere. The light reaching this sphere has been split into two polarized light beams, each of the same wavelength of light and, in the course of an analysis, covering the entire spectrum. One of these beams strikes the standard—usually a piece of "pure white" magnesium carbonate—and the other the sample under investigation. If the analysis is for reflected light, both the standard and sample are affixed to the sphere.

Before entering the sphere the light beam passes through a rochon prism mounted in the hollow shaft of a high-speed synchronous motor. The rotation of this element serves to vary the light intensity of the

incident beams from minimum to maximum on the sample and standard out of phase with each other. A phototube views a frosted glass in the wall of the integrating sphere, the brightness of which is a function of the sum of the product of beam intensity and reflectance for both sample and standard. When the light reflected from the standard and sample is not equal, an alternating-current component is present in the phototube current. The phase of this alternating component with respect to the voltage applied to the synchronous motor determines which of the two reflected beams is the more intense. This amplified alternating component is then used to control the direction of rotation of the balance motor by a Thyatron tube stage which readjusts another rochon prism to obtain a redistribution of energy in the sample and standard beams, thus removing the alternating component in the phototube current. The angular position of the last-mentioned rochon prism is then a measure of the reflectance of the sample in terms of the standard.

Transmission measurements are made by using a sample and standard of the same material—again usually magnesium carbonate—and introducing the transmission specimen in the incident sample beam. Provisions are also provided for placing a standard transmission specimen in the standard beam.

The light incident on the sample and standard is derived from the same source, thus eliminating the characteristic of the light source in the measurement. The optical system with respect to the standard and sample is common, with the exception of one pair of decentered lenses, used to obtain wider angular deviation of the sample and standard beams. Since the voltage amplifier and Thyatron tube stage amplify alike the current due to light from sample and standard, the measurement is independent of the characteristics of these units. Since only monochromatic light reaches the phototube, the spectro-response characteristic of the phototube does not enter into the result.

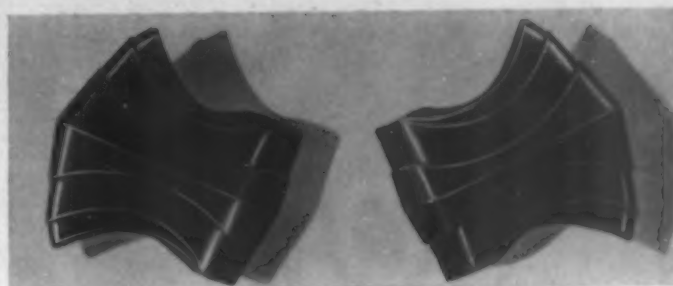
As the record drum revolves, the wavelength of the light reaching the standard and sample is varied at a uniform rate from the red to the violet end of the spectrum. Since the device is a recording instrument, it does not require the services of an operator with specialized training in optics. Using a phototube, it has ample sensitivity at the violet end of the spectrum, where visual spectrophotometers must fail because of the low visibility of violet light.

One of the most important fields of usefulness for the new instrument is the cataloguing of the curves of different dyes, inks, and pigments, so that new colors with predetermined characteristics can be obtained at any time by the proper mixture of standard colors already at hand.

New noise tester

In order to make visible the difference in gear noises made by laminated gears and metal gears, the Synthane Corp. manufacturers of laminated sheets, rods, tubes and gear materials developed a device called the "Noisometer" which was exhibited for the first time recently at the Machine Tool Show.

The Noisometer consists essentially of two parts, a cathode ray oscillograph and a train of spur gears.



Hot Waffles

ARE EASIER TO MAKE
WITH THE COOL A:R:C
PLASTIC HANDLES ON
THIS WAFFLE IRON



Handles are a small part of a waffle iron. But they can add a lot to its beauty and utility. The American Record molded plastic handles on this waffle iron please the purchaser, because they add to its convenience in use—and make it pleasing to look at when not in use. The same advantages of added beauty and utility may be applied to your product with modern plastics molded by American Record Corporation.



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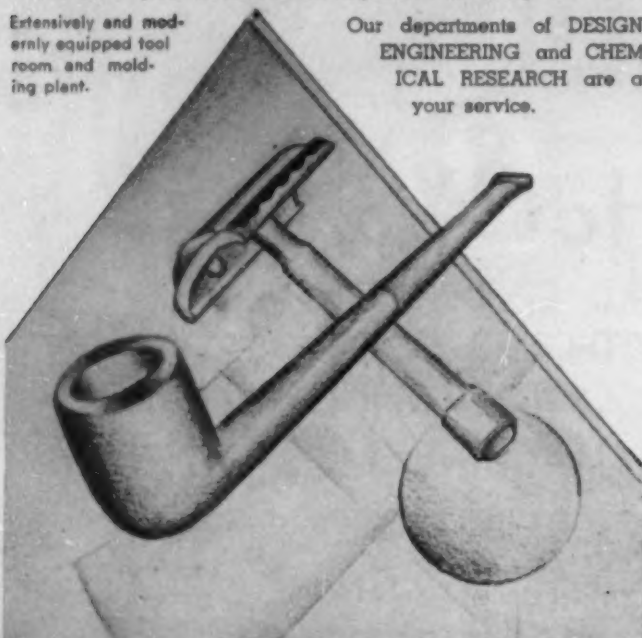
Another American Record Waffle Iron Handle, Plastic Molded in the Modern Manner

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Extensively and modernly equipped tool room and molding plant.

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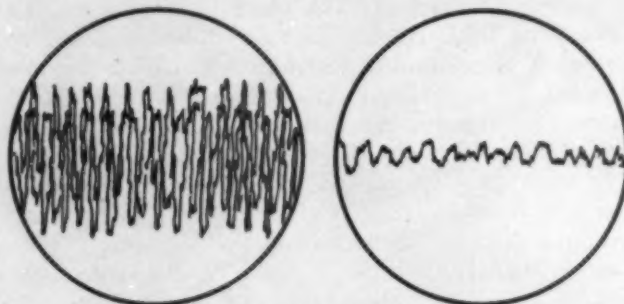
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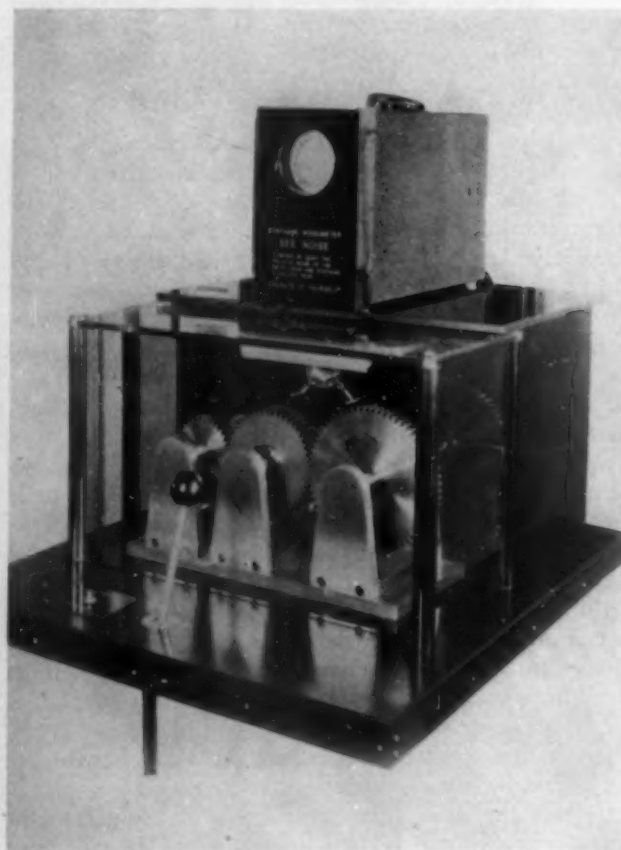
Phthalic Anhydride Flakes



The gear train is so arranged that through a gear shift lever either a Synthane laminated gear or a steel gear can be thrown in mesh in the intermediate position. Driver and driven gears are steel. The laminated and steel intermediate gears were cut at the same setting and keyed to the intermediate shaft.



These two curves show relatively the noises made by the gear train with Synthane and steel intermediate gears



In the illustration, the laminated gear is shown in mesh. By pulling the shift lever forward the steel gear can be cut in while running. Thus, a comparison of the noises can be quickly made by ear. A more accurate, graphic comparison can, however, be made by eye at the same time. You will notice on the panel in back of the gears a microphone. Noises generated by the gears and picked up by the transmitter are relayed to the cathode ray oscillograph mounted on top of the display. Noises are reproduced as a pale green line on the screen of the cathode ray tube, the height of the wave, or amplitude, representing the volume. (See the illustration above for comparison.)

The Noisometer demonstration proved so interesting to Machine Tool Show visitors that it has been set up in the Synthane plant as a permanent exhibit.

The balancing act

Most of us (not all, of course) at one time or another have had considerable difficulty manipulating a cocktail, cigarette and an ash tray, a few crackers, peanuts or those funny little nibble sandwiches that are usually served on such occasions. Most of us have thought something ought to be done about the matter but like the weather until very recently, nothing developed from these stray thoughts. Now this worry has been eliminated from the interesting over-the-glass conversations and you'll be allowed to concentrate on the Ethiopian question or why shouldn't men wear blue shoes.

This little device pictured is called the Cheeri-O Trayette and although very simple looking, it accomplishes a number of useful tricks. For instance, there is a round depression in which the base of the cocktail glass is set, thus preventing that usually elusive thing from sliding around and tipping over. That same end of the tray, however, is large enough to handle the base of an old fashioned glass and the other tumbler type beverage containers.



On the opposite end is a place for the hors d'ouvres, peanuts, popcorn, or what have you. Saddled in between these two arrangements is a very interesting piece of metal. Note the sloping sides of the plastic tray that suggests a place for depositing cigarettes. That's just what it is meant for but when you finish smoking you simply push the "butt" in underneath the metal canopy and presto, the cigarette goes out—no smoke, no ashes, no unsightly pile of cigarette debris to take the edge off the cocktail or make you feel you've had enough of those cute sandwiches. The little wings on both ends provide a non-slip grip for the daintiest fingers and still will accommodate quite the largest paw in captivity.

Marketed in sets of four, each molded of a different colored plastic material, the ensemble package is an eye-catching purchase-urging display. Distribution just recently began by D. H. Borwick & Co., and from present indications of the popularity of the item, there will be some production worries very soon. The tray was designed by Elenore Groos.

for MORE ECONOMICAL PREFORMING



Stokes "DDS-2" Model. Die fill up to 2 inches; maximum preform diameter 1 1/8"; output 350 pieces per minute.

STOKES
ROTARY
PRESSES
"DS-3"
"DDS-2"



With from 1/3 to 1/2 of the total number of punches and dies, these machines have a production equal to single punch equipment. They may be operated with as few pairs of punches and dies as the job warrants with punch and die costs kept to a minimum. As production grows, they may be readily expanded to capacity by simply inserting the necessary pairs of punches and dies.

These new model Rotary Preform Presses are particularly designed for easy cleaning or "change-over" for different color or size of preform.

They are equipped with the patented Excess Pressure Release which, acting through springs rather than weights, spills any overloads and absorbs strains. Among the other advantages of these presses is that of being able to make, with less pressure, preforms harder and of more accurate weight than single punch machines. They are rugged, having semi-steel frames, and are equipped with improved drive, simplified adjustments, etc.

Write for Catalog 33-T or request an engineer to call.



Stokes "DS-3". Die fill 1 1/2"; maximum diameter of preform 1"; output 250-275 pieces per minute.

SJS STOKES MACHINE COMPANY

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The Hickok Company, one of the first firms to use molded packages and also one of the most successful, has chosen the Diemolding Corporation to do its work.

Yet the fine moldings we have produced for Hickok are but typical of the entire output of our plant . . . a plant manned by engineers skilled not only in molding technique but in the relating of their work to your particular needs. Call upon these men as you would upon your own plant executives.



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Modern hydraulic press

A new design of hydraulic press, with self-contained hydraulic power unit using oil as the fluid medium, is announced by Farrel-Birmingham Co. The press is designed especially for plastics and rubber molding operations although readily adapted to other work.



It is of 100 tons capacity and has platens 20 in. square, with an opening of 12 in. between platens. In line with the modern trend in industrial design, the appearance of this press is pleasing to the eye, as all component parts that are not functional in the actual operation are enclosed, although readily accessible for inspection and maintenance purposes.

Choosing right material

(Continued from page 35)

Mechanical

1. What resistance to shock is desired? (Relative comparison A.S.T.M. Impact strength).
2. Is the part under a tensile, compressive or bending stress in service? Describe nature of such stresses.

Electrical

1. What is the shortest distance between conductors through the molded section? What is the shortest distance between conductors across the surface of the molded section?
2. What is the applied voltage?
3. What current in amperes is carried at that voltage?
4. Is the current direct? If not, what is the frequency?
5. Is the circuit broken in direct contact with the molded section? Is it permissible to make changes which will prevent such a break?

6. Can design of conductors be changed to reduce tendency to cause breakage?

Chemical

1. Is the part immersed in water? Is water or water vapor present on one side only?
2. Give acids and concentration that the molded part must resist.
3. Give alkali and concentration the molded part must resist.
4. What solvents must the molded part resist without bleeding or disintegrating?
5. Give chemical composition of compounds or mixtures which the molded part must resist.

Displays that can take it

(Continued from page 12) Fischer, some five years ago, began building displays for the American Telephone Company. During this comparatively short intervening period of time he has built Fischer Exhibits, Inc., into a sizable business requiring 19,000 square feet of space in which to build traveling and permanent exhibits for an ever increasing list of America's largest advertisers.

"In the beginning," says Mr. Fischer, "I tried all sorts of material because I was determined to build only displays of quality that would give no unnecessary trouble in use. We were the first in the display field to use plastics and we are frank in expressing the opinion that our initiative in this direction was largely responsible for our success.

"We like plastic veneers because they can be chosen in basic colors and do not have to be painted and decorated after the displays are built. There is no other material which can be handled this way. There are no other materials that can duplicate the permanent luster of plastics no matter what finish may be applied. Nor will they stand up as well in day to day service and travel.

"If you compare lacquered or fabric exhibits with those of plastics you will quickly see that the small additional cost of plastics is a practical investment. The average life of a lacquered or fabric display is about six months, much of which time is consumed in traveling back and forth to the factory for repainting and repairs. The average life of a plastic display is about three years, all of which may be occupied in actual service because they seldom need to return to the shop for repairs.

"We have at the present time about seventy-five men in our plastics department. We train them in cutting and handling the materials with our special equipment, most of which has been created and designed here in our own shop. There are no complications or difficulties with building plastics displays such as were experienced with painted jobs which frequently popped back for repainting or repairs almost before they had reached their first port of call.

"Just recently, one of the International Silver Company's displays came back to the shop after two hard years on the road. A good cleaning, requiring about an hour, made it as good as new. A very critical examination failed to disclose any serious damage to the finish or any breaks in its physical construction.

"The real mission of any display or exhibit is to



You know how under-cured flat work will warp

Flat work need no longer be dreaded with this accurate, quick and convenient means of checking temperatures. When molds are hot enough you know you are fully curing. When they are not too hot you likewise know you are getting uniform color. The modern Plastic Plant requires an accurate and dependable means of checking mold temperatures . . . The Cambridge Mold Pyrometer.

Cambridge Instrument Co., Inc.,
3732 Grand Central Terminal,
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Pioneer Manufacturers of Precision Instruments



CAMBRIDGE
Mold and Surface
PYROMETERS

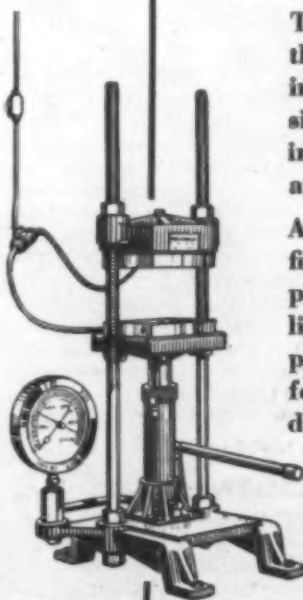
Send for details of these instruments. They will help save money and make better plastics.

The CARVER LABORATORY PRESS

For Plastic Molding

There is nothing like this little press for testing plastic materials, single cavity molds, making samples, research and control work.

A self-contained unit fitted with electric hot plates—just plug into light socket or steam hot plates if desired. Write for catalog giving full details.



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finest in molded parts
for over forty years



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**A Pyrometer
specially designed
for the MOLDER**



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"Alnor" Pyrometers are also made in permanently mounted styles for continuous readings.



8. International Silver Company display of laminated plastic with oil painting on cut-out circular disc

sell merchandise. Failing that the exhibit is useless. Plastics lend themselves to this mission very nicely indeed. Letters of contrasting colors may be laminated into the background, becoming an integral part of the surface where they will not catch dust or dirt. They can be opaque, or translucent and lighted from the back. Other letters may be cut out of these materials and applied to accentuate a strong selling message.

"Where merchandise is to be shown in connection with an exhibit, the luster of plastics cannot be equalled for the purpose. They combine well with metals and mirrors for modern lines. Mechanical displays which depend upon motion for their appeal run true and do not get out of order easily when mounted upon the substantial construction made possible with plastic materials. This is easily explained because the materials themselves are rigid and inert. Surfaces which are exposed to all sorts of abuse while in the hands of carriers and those who handle them in stores are such that they resist acids and alkalis without impairing the finish.

"It is not at all difficult to convince a client that plastics are adequate and practical materials to use. All we have to do is show him a display of other materials that has been on the road a short time, and then show him one of plastics that has had ten times the service. No other sales story is necessary, nor could it be as effective.

"In fact," concludes Mr. Fischer, "about the only way in which plastic veneers fail, is that they fail to give trouble."

Fischer Exhibits uses various thicknesses of laminated phenolics and ureas, depending upon the strength required for the particular piece under construction and the colors desired. Mr. Fischer says that plenty of the material is carried in stock in New York to meet any emergency. He uses Worcester and other clip moldings to cover joints for a perfect job.

He has just refinished his home dining room with laminated plastics and we asked him why architects make such limited use of the materials. "They haven't troubled to find out how to handle it," he replied. "If handled properly, it is the finest material on the market for interior finish and when properly used with the right kind of clip moldings, it makes a perfect job."

Mr. Fischer has designed exhibits for many important occasions during the past few years. Successful displays from his shops have traveled all over the country. Permanent exhibits have been created in many locales. His Singer Sewing Machine Exhibit at the Century of Progress was an outstanding success. He believes that there are going to be some remarkable opportunities for plastics installations at the coming New York Fair in 1939.

9. Long distance display for American Telephone Company has cut-out letters of wood and plastic over large plastic veneer disc. Figure at bottom foreground is carved. An automatic electrical device flashes long distance telephone rates at various points along the map



Laminated gears—strong—silent

(Continued from page 24) When it is considered that the necessity for replacement requires a complete shut-down of the equipment for more than six hours, it can be readily seen that the installation of laminated gears in this press is the best insurance for efficient and economical operation for continuous production.

Picture "G" shows an original application of laminated sheet material on a cutting and creasing press. Into this machine are fed sheets of box board, printed and ready for cutting into box blanks. The die in the foreground is very carefully built up with cutting and creasing rule and its accuracy determines the correctness and size of the finished box. Literally mil-

Radio Cabinets... or what have you?

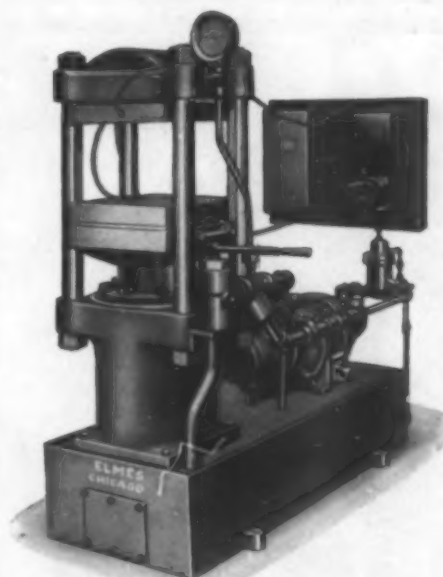


Designed by George Barton, Jr.
Emerson Cabinet 6 3/4" high x 9 1/4" wide x 4 3/4" deep. Note fine surface and number of portes.

IT IS SIGNIFICANT that Pilot, Emerson and others have selected us for the molding of difficult radio cabinets. What we have done in this line, we can do in yours. Why don't YOU benefit from our modern plant, our mold making facilities, our skilled engineers, our trained workers?

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Uniform and adjustable pressure, from 300 to 2000 pounds.

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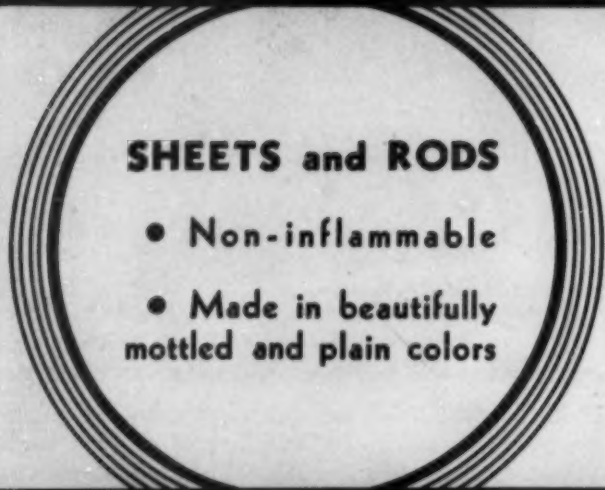
Closing Stroke eight seconds.

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lions of folding boxes are used by cereal, soap, salt, and other staple commodities manufacturers in connection with high speed automatic filling machines. The speed and accuracy of the filling machine is a most important factor in the resulting profits to such industries.

Into such filling machines are fed the cartons, knocked down flat. The machine opens them, seals the bottom, introduces the exact measured weight of the commodity (often in addition to this operation it inserts a folder or small premium item) and seals the top. Minute variations in dimensions of cartons result in jamming these machines so they must be slowed down to a point where profits diminish or, in some cases, are wiped out altogether. Frequently the dies, as shown in the photograph, cut and crease as many as 50 or 60 boxes at a time. Consequently each must be a perfect duplicate of the other to eliminate filling machine troubles. Ordinarily these dies are built up with steel cutting and creasing rule and the spacers are usually made of laminated wood. Dimension changes in the wood as it takes up and gives off moisture, throw the die off-size and packaging troubles begin.

Heretofore, when extreme accuracy was required, Gardner-Richardson Company built these dies out of metal, usually aluminum, machining the intricate shapes in its machine shops at considerable expense. Recently, however, the company has found that laminated material may be sawed and fitted by its regular die makers on conventional Ostrander-Seymore trimmers to the required dimensions and that resulting dies are absolutely accurate and undergo no changes with temperature or moisture conditions.

These examples of superior performance of laminated sheets and gears in the paper industry are being repeated in different parts of the country in many industrial plants. Engineers charged with the responsibility of economical shop maintenance and continuous production will recognize troublesome points of operation in their own plants where laminated phenolics can be employed to advantage. Silk mills and other plants engaged in the manufacture of perishable products where black dirty lubricants can do much damage, will welcome these cleaner and equally efficient gears which may depend for their lubrication upon water alone when oil is impractical.

Plastics in aviation

(Continued from page 19) bility standpoint. Fabric-filled material is favored wherever there is any considerable abrasive action as in the case of pulleys, switches and bearings.

Following is a list of plastic materials used by the Boeing company in both its commercial and military planes:

<i>Laminated Sheet, Canvas Base, Phenol Composition</i>	
Engine control washers.....	Machined
Fuse box liners.....	"
Connector box liners and covers.....	"
Switch shields	"
Control rod bearing.....	"
Pilot's door window shutter.....	"
Junction box insulator.....	"
Control pulley	"

Laminated Sheet, Paper Base, Phenol Composition
 Fuse panelsMachined
 Connector panels"
 Radio panels"

Molded Phenol Composition, Canvas Base

Control pulleys (AN-210).....Molded

At least two pieces of special airplane equipment use plastics. The Fairchild Aerial Camera uses phenolic in the two film guide rollers and in the metering rollers of each magazine, and in the focal plane contact glass restraining strips. And here is a snappy one. For speeding up aerial news and military photography, the Davidge Film Laboratory, Hollywood, has created a new developing tank, made of molded phenolic, which enables the flyers to put their films in process immediately after exposure, thus using to advantage the time of flight back to their base.

Considerable amounts of phenol formaldehyde and glycerylphthalate resins are used in finishing the frame and other metal parts of airplanes to prevent corrosion. The finishing fluid is forced through the passages of welded frame tubing to insure safety where inspection is impossible. Cellulosic dopes are still used to finish all fabric-covered ships. This "dope" is composed of cellulose nitrate or cellulose acetate and organic plasticisers, solvents and diluents.

Until today, the very magic of air travel was enough to sell it, without any comforts and refinements. It's the railroad story all over again. Now, people have accepted aviation as a matter of course and they choose the line that offers the best-finished interiors and service. Contributing to the necessary swank is decorative laminated for cabin interiors, which is not only light, strong, and fire-resisting, but pleasing in appearance. That completes a rough sketch of plastics at work in the air up to now. Let's see what the future possibilities are for fabricating major parts of aircraft in plastic.

Says Marcus Langley, in *The Aeroplane* (British) October, 1935: "The ideal material for aircraft construction would be as cheap, and as easy to work, and have the same strength to weight ratio as wood, but be obtainable in unvarying quality, impervious to the effect of continuous exposure to the weather, non-inflammable and free from shrinkage and the liability to decay. Additional advantages would be ease of welding—the material should, for instance, weld as readily as mild steel. And it should have the property of being readily formed and molded in a press.

"Dr. N. A. de Bruyne, Director of Aero Research, Ltd., recently suggested that the properties of such an ideal material would be closely approached by a paper bonded with artificial resin of the phenol-formaldehyde type.

"The Schwartz method of protecting airscrews, developed in Germany and now in general use in England, relies on the impregnation of wood with a plastic. Again, plywood, in which the adhesion of the plies is provided by an artificial resin instead of glue, has been used both in England and abroad.

"So far, however, there do not appear to have been any aeroplanes constructed largely, or even in part, of synthetic materials, the use of which has been confined to secondary details . . . but the unconfirmed statement has been made that the webs of the spars



ELECTRO-MECHANICAL PARTS OF MOLDED PLASTICS

The Chicago Flexible Shaft Company's Electric "Clipmaster" parts are molded of impact Bakelite to provide extra strength, lightness, and electrical and heat insulating qualities. The motor housing proper, which also serves as the handle, is always cool, comfortable, and safe. Absolute accuracy and uniformity of all molded parts were required, to permit complete interchangeability and easy assembly.

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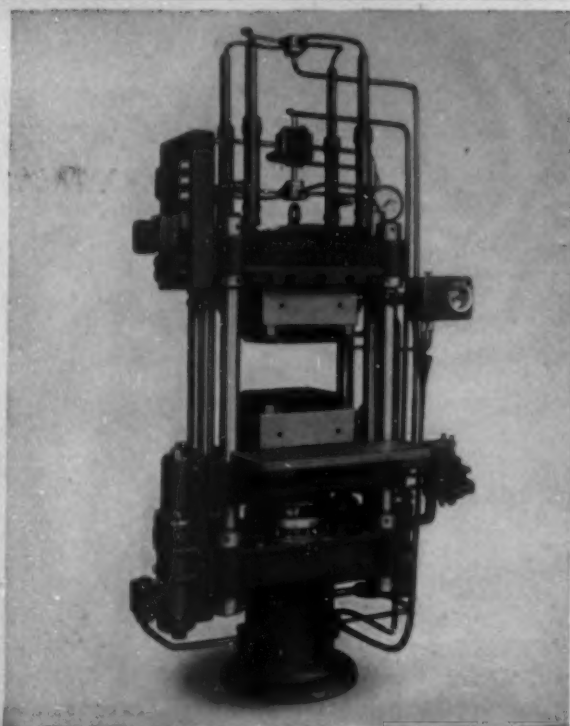
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of the Pander Postjager ship were of synthetics . . ."

Mr. Langley says that the surface finish of modern high speed ships is of great importance. At high speed, skin-friction drag forms a large proportion of the total resistance. Overall shapes and streamline forms have been studied intensely, but the "sand-papery" of air, a comparative solid at high speeds, is little understood.



Airplane control stick handles of cast resinoid

Fabric with normal doping is not ideal. Some fabric-covered American machines have a very high gloss finish. But this may fail on a heavily loaded cantilever wing, owing to its weakness, and the lifting of the fabric over the leading edge has led various manufacturers to adopt non-flexible covering.

Manufacturers have two alternatives at present; plywood or thin metal sheet. A stout stressed-skin wing may be made, using either of these materials.

Wood is very satisfactory for small jobs which are not to be subjected to great extremes of climate. If correctly treated, wood may give an excellent surface, better than any so far attained by other methods. It implies, however, an all-wood structure to give the best results, and that is liable to be heavy on a large machine.

The metal-clad wing, particularly if made of light alloy, has become popular and has many points in its favour. The raw sheet is of almost perfect smoothness; it is strong enough to withstand high-surface-loading and it contributes largely to the stiffness of the whole structure. It will certainly not sandpaper the air, though rivetheads and edges do offer strong resistance. In some speedy machines recently produced, an unevenness of only a few thousandths of an inch is important. To countersink rivet heads and to scarf or "joggle" sheet edges are expensive processes and even so the finish is not perfect.

Looking at it aerodynamically, structurally, meteorologically, economically, or in any other way, the existing materials are not ideal and they drag, more or less. The smooth, glassy finish of the surface of a "plastic" article would overcome this resistance. Plastics are still in the early stage of development; much

laboratory and shop research must be done before we can use them extensively. Yet enough is already known to justify some research expense.

Metal wire or metal strip may be molded into a plastic to give it particular desirable characteristics. This is analogous to the use of steel rod reinforcements in ferro-concrete. Another possibility indicated by Mr. Langley is in the use of a different form of composite construction in which laminations are molded together, each lamina being purposely chosen to develop a particular characteristic in that position. The possibilities are endless, and only the surface of the subject has been explored.

While the public often pictures cups and saucers and telephones and gimericks when they think of plastics, the technicians are thinking about (among many other things) airplane wing ribs, struts, sheet stuff for body and wing covering. It is no secret that dreams of airplanes almost entirely of synthetics are already being entertained in able minds. At this moment the same dead end that stopped the first laminated propeller—high cost of molds for low production—halts any progress toward major aircraft parts before it starts.

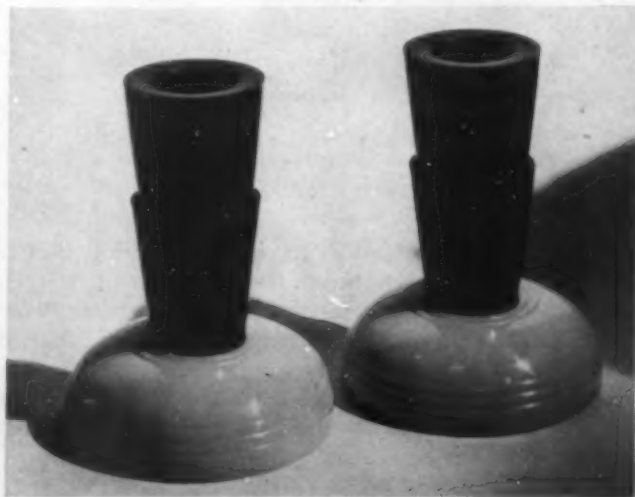
Mass production of private service airplanes is a quiet issue just now, but plans in the offing may change this situation at any moment. When mass production really begins, this price differential will rapidly disappear and plastics with their obvious advantages over other less stable materials for many parts will find their place in this development.

Gay colors—premiums and gifts

(Continued from page 36) small bracelet tubing of cast resins. Their gay colors afford an easy method of napkin identification. Even paper napkins attain a festive appearance when on guest occasions they are folded into these rings.

One of the greatest attractions these have for the hostess perhaps is their low cost which permits owning several sets of napkin rings, pepper and salts with matching candlesticks without any substantial investment. Different colors for different occasions may be

Cast resin candlesticks of modern design and bright colors. Made in two parts, they are cemented together at the base



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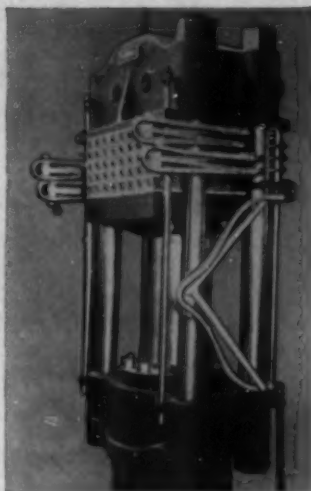
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inexpensively obtained. No one can have too many.

For the boudoir or powder room, cigarettes must be provided. Containers must be in harmony with other accessories. They must be feminine. You will see how perfectly practical it is to have them so if cast resins are used. Colors may match powder boxes and cream jars and the same ribbed or turned decoration can be carried throughout the room. One of the boxes illustrated is jade green, oblong in shape with a protruding black base. The cover is black and a block of green is cemented on top with lines in keeping with the simplicity of the container. This type of cigaret box is pleasing to women because it is both decorative and pleasant to touch. There are other cigaret boxes, too, of mottled pink and white or any pastel shades for boudoir service. One of these boxes has a ribbed body with a pink ornament daintily set in its white cover. The white base extends so that there is little tendency to tip over. A powder box of mottled cast resin and identical design is made in the same color scheme to complete a set, or is available in any of the cast resin colors. There is also a candy jar with ribbed body of cream and a red base and ornament both suitable and charming for the guest's comfort.

Men are not forgotten either. There is a practical traveling brush and container which solves the problem of what to do with a wet shaving brush when away from home. The case has a screw on cover with a small aperture at the very top, edged in black, which allows the air to circulate to speed drying so the brush doesn't sour. At the same time the case protects other articles in the suitcase from coming into contact with the wet brush. The container as well as the brush handle is made of cast resin in turquoise blue and other pastel shades.



This brush can go places because the cast resin container prevents wetting other things in a traveling bag. Top is ventilated to prevent souring

Color is so important in modern decoration that it can make or break a room. Wisely chosen, it contributes to the feeling of comfort and repose. Gay colors make a room appear cheerful and young. Dull colors may make it drab and old. Therefore decorative spots of color such as ash trays, cigaret boxes, book ends and other familiar objects may be made of cast resins to gain a better decorative result.

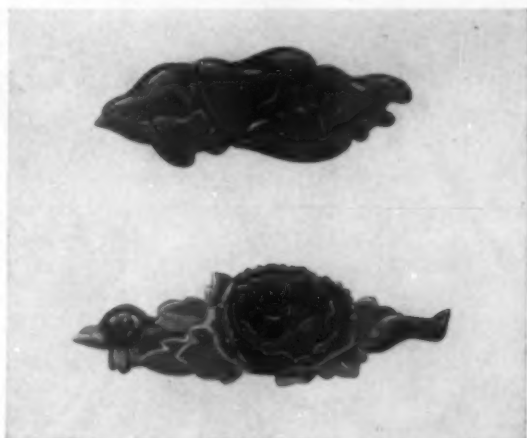
Women are keen about color. They know how to

choose and combine color schemes for their homes. If items are garish and badly designed they will have none of them. But cast resins, with their delicately subtle or their bold sparkling colors may be fabricated easily into decorative objects that will win the applause of the most fastidious and at prices that will gain many new friends for the manufacturer who uses them wisely and well.

Plastics in Japan

(Continued from page 21) phases. The individual uses are too numerous to consider here, but closely parallel work in America.

In order to avoid any false impression, it seems advisable to mention briefly the role of plastics in Japanese industry. Industrial application is, of course, the primary outlet for plastic materials in Japan as elsewhere throughout the world. The artistic phase is only a variation, interesting in its uniqueness.



Japanese artistry is displayed in the intricate moldings of Obi (sash) buckles. The buckles are molded in two or more colors

The amazingly rapid assimilation of Western industrial development by Japan has opened all the various fields that are dependent upon plastics in the United States. Of primary importance for both molded and laminated materials is the electrical industry. Radio and telephone industries consume large volumes of plastics. Japan's rayon industry is being spun rapidly to world prominence in laminated buckets. These buckets are tested for 12,000 r.p.m., and maintain from 8,000 to 10,000 r.p.m. in production. Domestic manufacture of automobiles is now a reality in Japan. Factories, producing fifty cars a day at present, anticipate a volume of 500 a day in the near future—a new mass production field for plastics. Phenolic resins have fulfilled their requirements in the advancement of the numerous branches of the paint industry. Modernization in structure and designing calls for more color, therefore, more varieties in paints, enamels and lacquers based on these resins.

Japan is fully cognizant of the vital importance of plastics in modern life. The entire industry is firmly established, and is now striding forward in seven-league boots to its deserved prominence among the great industries of Japan.

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